

# THE IRON AGE

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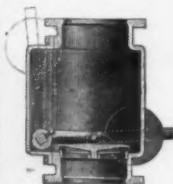
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SEE  
PAGE 27



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# THE IRON AGE

New York, Thursday, August 12, 1909.

## THE MESTA MACHINE COMPANY'S PLANT.

In West Homestead, Allegheny County, Pa., on the Monongahela River, about six miles from the business center of Pittsburgh, and adjoining Homestead, Pa., is located the immense plant of the Mesta Machine Company. Being in the heart of the greatest iron and steel manufacturing district of the world, much of its product—heavy duty engines for rolling mills, blast furnaces and power plants; rolling mill machinery; steel, sand and chilled rolls; steel castings, and machine molded gears—has to be shipped but short distances. Shipping, however, to more remote places is well provided for, as the plant has direct connections with the Pennsylvania, Baltimore & Ohio, Pittsburgh & Lake Erie and New York Central railroads, and, as before mentioned, it is on the Monongahela River, by way of which it receives

can also be used when making shipments of machinery by river. On the river side of the machine shop is a yard covered by two electric traveling cranes, running the entire length of the shop. This yard is used for storing castings as they come from the foundry until the machine shop is ready to receive them. Directly back of the power house is a large forge shop, and immediately behind this the foundry, paralleled by a two-story and basement pattern shop, 60 ft. wide and 175 ft. long, and pattern storage buildings. The foundry building has a main bay 80 ft. wide, a side bay 60 ft. wide and a 25-ft. lean-to on the opposite side. This foundry is also equipped with overhead traveling cranes and traveling jib cranes.

On the river side of the foundry building is an 84-ft.

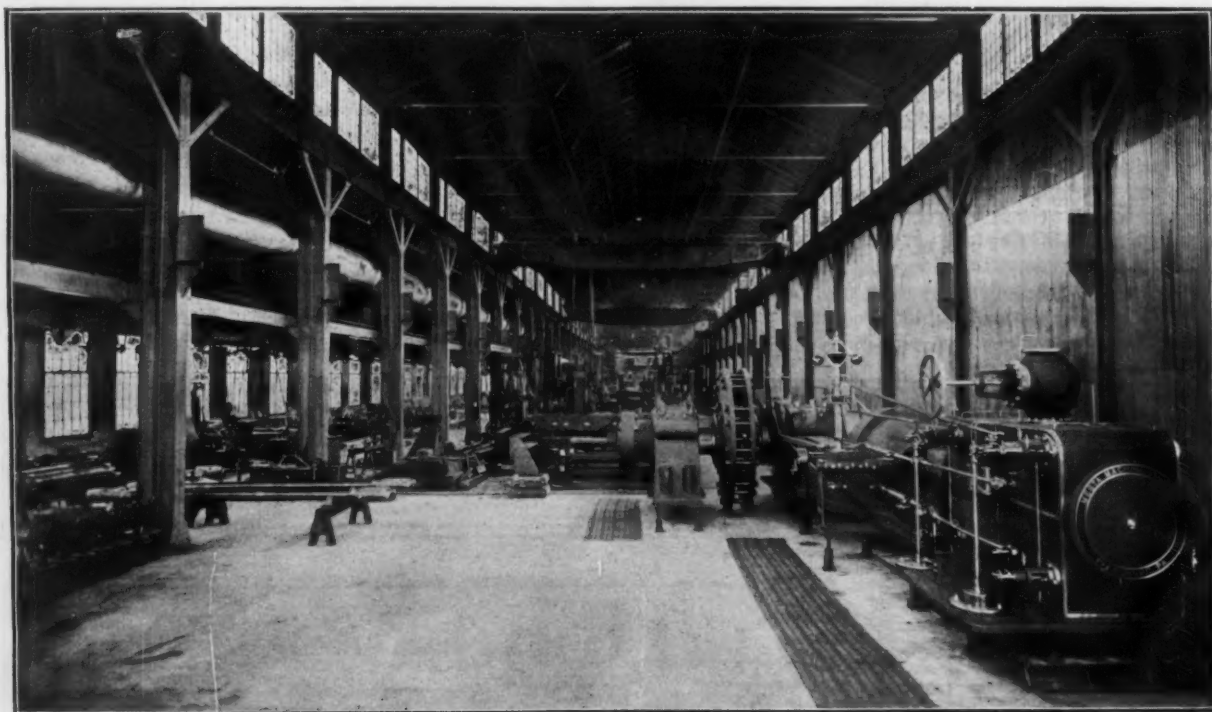


Fig. 1.—View in the Machine Shop of the Mesta Machine Company's Plant at West Homestead, Pa. An Erecting Floor in the Foreground.

considerable of its raw materials and supplies and ships some of its product. Although so close to the river and having river frontage, the floor line of the entire plant is 15 ft. above the highest level reached by the river.

The plant covers about 20 acres of ground and has about 500,000 sq. ft. of floor space under roof, and over 400,000 sq. ft. covered by electric traveling cranes. At the front is a four-story, fireproof office building, where the general books and records are kept in large fireproof vaults. Directly behind the office are the contiguous buildings containing the machine and erecting shops. These are built of steel, concrete and fire brick; their combined width is 210 ft., their length 1000 ft., and like all of the other buildings, which also are built of steel and concrete, they are entirely fireproof in their construction. The overhead traveling cranes in these departments, and the machine shop tools, are capable of handling the heaviest pieces of machinery that can be shipped.

Adjoining the lower end of the machine and erecting shops is the power plant. From the boiler house extending to the river is an overhead bridge upon which coal is conveyed from barges to the coal storage. This bridge

yard covered by 30-ton traveling gantry cranes. This yard is used for storing raw material, flasks, &c., and through it cars of material are distributed to the various departments by the plant's own locomotive.

### The Office Buildings.

The office building has four floors, and is modern in construction and equipment. The first floor contains the time office and an emergency hospital, a library for the employees where all the leading technical and scientific periodicals are provided. This library is also used as a branch of the Homestead Carnegie Library. There is also a private dining room for visitors and officers of the company, as well as a larger dining room where luncheon is served daily to the office men, foremen and assistant foremen of the works.

On the second floor are the offices of the officials of the company, the general offices, and offices of the general superintendent of the works.

The third floor is devoted entirely to the sales department and contains the offices of the vice-president and sales manager, the estimating department, blue print room, photographic department, letter files, offices of the selling engineers, and a reception room for visitors. This



Fig. 2.—Erecting Floor Where Engines 50 ft. High Can Be Assembled.

floor also contains a fireproof vault where all foreign tracings, blue prints and drawings are kept.

The fourth floor is entirely devoted to the engineering department with its drafting rooms and offices for the heads of each department. Long fireproof vaults are here provided for designs and tracings. A complete filing and index system enables locating any piece of work quickly.

#### The Machine and Erecting Shops.

Like the walls, the floors of the machine shop building are concrete, except certain sections which are heavy cast iron plates slotted for bolting heavy castings solidly to the floor, enabling simultaneous operations with portable tools to be performed on a single piece of machinery. Frequently as many as three or four tools are operating on a casting at the same time.

Fig. 1 shows one of the machine departments, 85 ft. wide and 1000 ft. long. In the foreground are the concrete erecting floors, on which may be seen erected a large horizontal Corliss engine ready for dismantling to load on cars for shipment.

Fig. 2 shows another erecting department, 60 x 100 ft., the floor of which consists of a concrete slab 4 ft. thick, where the vertical engines, such as blowing engines and mill and power engines, are erected. This special heavy floor was installed so that engines 50 ft. high could be erected without danger of settling out of alignment during the process of erection. This erecting floor has two craneways, one 35 ft. above and the other 50 ft. above the floor. Four pairs of vertical cross compound blowing engines 48 ft. high have been erected on this floor at the same time.

Fig. 3 shows the erecting floor where the rolling mills and machinery of special designs are machined, assembled and erected. In the foreground will be seen parts of a 600-ton metal mixer in process of construction. The tools throughout the machine shop are massive, and equal to the heaviest demands of modern machine practice.

#### The Roll Shop.

The roll shop is large and well lighted, with a capacity for an enormous tonnage. It is equipped throughout with special heavy roll lathes of the company's own design and construction. Any class of roll and pinion work can be executed expeditiously. In Fig. 4, a view of this department, are shown many shapes and sizes of sand, chilled and steel rolls, for rolling iron, steel, brass, copper, zinc, rubber, glass and paper. Special water chilled rolls are also shown, and the Mesta patented vanadium



Fig. 3.—View in the Main Erecting Shop and Bay Where the Largest Machine Tools Are Installed.



roll, which is used where close tough metal is required. Fig. 5 shows some of the heavy roll lathes finishing the necks and shrouds of machine molded nickel steel pinions. Lathes for this work must be massive and very accurate, as it is necessary that the necks of pinions of this kind be turned absolutely true.

#### The Forge Shop.

A large well equipped forge shop contains three large hammers, four forges and a large gas heating furnace. It is always well stocked with ingots from the open hearth steel melting department, comprising carbon steel



Fig. 4.—View in the Roll Shop. Lathes in the Distance and Typical Product in the Foreground.

of any desired carbon, and nickel steel and vanadium steel. Particularly in its work with the latter alloy this company is favored as it makes its forgings at the same plant where the original ingot was poured. The advantages are ability to make prompt deliveries and the possession of the complete record kept of every heat, giving its chemical and physical analysis.

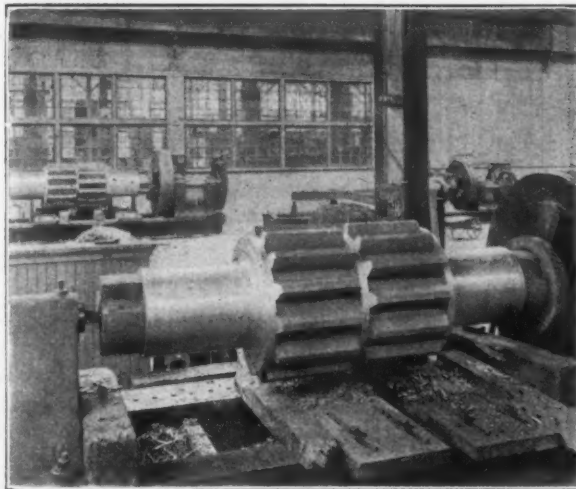


Fig. 5.—Finishing the Necks and Shrouds of Nickel Steel Pinions.

#### The Gear Department.

One of the company's specialties is the manufacture of gears for all purposes. Fifteen years ago it decided that the old method of making gears from wooden patterns was not sufficiently accurate to meet the demands of modern machinery, it consequently started to develop gear molding machines. These machines have been perfected and patented, and are now used by this company for making all cast gears. In Fig. 6 is shown a group of these gear molding machines making molds for both iron and steel gears. For certain classes of work for which extreme accuracy is required and where gears run with less clearance than can be obtained from even a machine molder gear, cut gears are recommended with the teeth first formed, however, on the gear molding machine.

The gear cutting department is equipped for cutting spur gears of all sizes up to 20 ft. diameter, and bevel gears up to 16 ft. diameter. For all large spur and bevel gear cutting gear planers are used. In making large cut gears the molds for the castings are first made on the gear molding machines, leaving sufficient excess material on the teeth so that they can afterward be planed.

The facilities for doing high grade work in iron, steel and brass and for turning it out promptly are exceptional,



Fig. 6.—The Gear Molding Machine Department of the Foundry.





Fig. 7.—View in the Top Floor of the Pattern Storage Building.

as the iron, steel and brass foundries adjoin the gear cutting department, and dependence on outside foundries for castings is avoided.

The iron castings are all made of air furnace melted iron; steel castings are poured from acid open hearth steel furnaces, and are made of carbon steel, nickel steel, or vanadium steel, as required.

#### The Pattern Shop.

The pattern shop is interesting, and attracts attention primarily because of its appearance of permanency. It has been built as nearly fireproof as possible. The heavy steel frame is embedded in concrete, forming a

building practically indestructible, and the roof is of reinforced concrete. Views in the pattern shop were given in *The Iron Age* July 1, 1909, in connection with a description of its electrical equipment.

On the top floor patterns for large engines, bed plates and the like are made. In addition to the windows around the sides of this room a large skylight extends the length of the building. It is very important in making large patterns to have overhead light in addition to the side light. Although this department is on the second floor the largest pattern can be handled easily to and from the foundry with the service of the traveling cranes. The equipment of machinery and tools is new throughout and of the latest designs. Many special tools have been installed for making patterns of unusual size and special designs.

In one section of the first floor tooth blocks for the gear molding department are made. This floor is also well lighted by windows on all sides, and is equipped with modern wood working tools. The offices of the foreman and the clerical forces are inclosed by concrete partitions, thus assuring safety of records, prints and designs from fire.

#### The Pattern Storage.

Fig. 7 shows the top floor of the pattern storage building, which consists of a number of rooms forming 60-ft. connections divided by fireproof walls. The doors between these sections are heavy steel and absolutely fireproof. In these rooms all small patterns are stored on long racks containing shelves to carry each different class of patterns in a compact space, but so systematized that any desired pattern can be instantly located and sent to the foundry across the bridges which connect the two buildings.

The first floor is also arranged in 60-ft. sections, where all large patterns are stored. There is no connection between the first and second floors except from the outside.

#### The Iron Foundry.

Fig. 8 shows part of the iron foundry with the chipping floor and core ovens in the foreground. This building preserves the symmetry of the entire arrangement of buildings. Its massive columns, immense height and appearance of strength attract attention. The columns



Fig. 8.—View in the Iron Foundry. Chipping Floor in the Foreground and Core Ovens at the Left.



Fig. 9.—The Core Oven Furnaces and the Underground Storage for Cores.

are spaced 20 ft. apart, forming 20-ft. bays, the span of the main foundry is 80 ft., over which travel 100-ton electric cranes. Along the side are numerous jib cranes, which are used for the lighter work, such as setting cores, handling flasks and supplies.

In the side foundry, which is 60 ft. wide, where the smaller work is made, the equipment is about the same as in the larger part, the only difference being that the capacity is limited to 50 tons. The roof of the foundry is of reinforced concrete 4 in. thick, and simply finished with a surface coat. It has been found after a year of service to be thoroughly waterproof and not to require the application of any other material on the surface.

#### The Core Ovens.

The core ovens represent a new idea in construction. The furnaces and storeroom for the cores are entirely underground, as shown in Fig. 9. The furnaces are fired with coke, and the upper parts of the ovens are covered by rolling doors of steel, as shown in Fig. 10.

#### The Air Furnaces and Cupols.

The air furnaces have a capacity for melting 250 tons of iron, if necessary, in one heat. For the smaller castings and for feeding the larger ones the iron is melted in an 84-in. cupola. The size of casting in this foundry is only limited by the carrying capacity of the railroads.

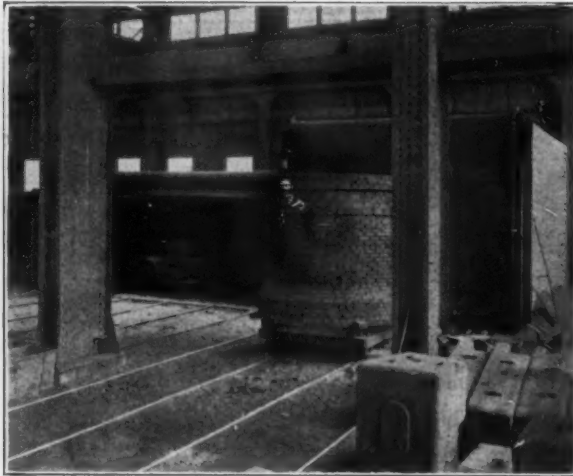


Fig. 10.—The Upper Part of the Core Ovens in the Foundry.

#### The Brass Foundry.

The brass foundry is equipped with a converter and crucible pots, and an electric hoist furnishes the power for handling the work. Fig. 11 shows the brass foundry, and gives a good idea of its commodiousness and excellent lighting.

#### The Steel Foundry.

Fig. 12 is a general view of the steel foundry, which is equipped with acid open hearth furnaces with a capacity of 125 tons of steel castings a day. Single castings can be made in steel up to 100,000 lb.

#### The Roll Foundry.

The company has long been prominent for its roll business, but probably few are aware of the constant effort to find better ways of casting chill rolls. The greatest success has come with the use of vanadium steel, and by the special water chilling process by which any degree of hardness or any depth of chill desired in a roll can be attained. This chilling being done mechanically permits the uses of tougher and stronger iron than formerly, when the chilling depended solely on the chemical composition of the iron, and the rolls consequently were brittle and lacking in strength.

#### Storage in the Pattern Building Basement.

Novel in a plant of its kind are the large storerooms in the basement of the pattern shop and storage build-

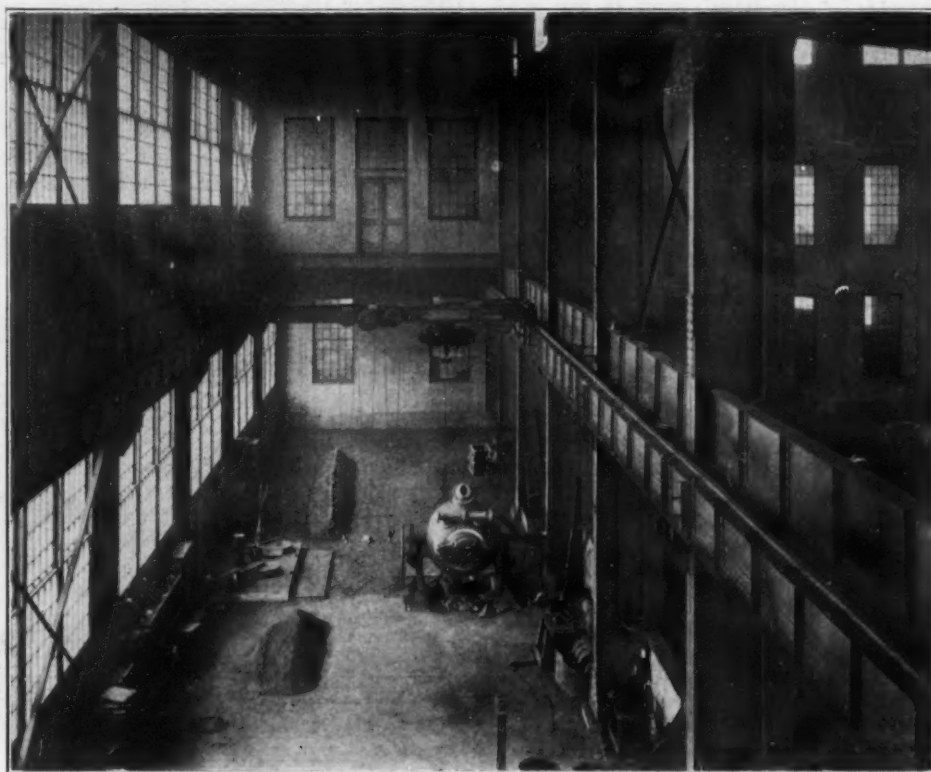


Fig. 11.—A View Looking Down on the Brass Foundry.



Fig. 12.—A General View in the Steel Foundry of the Mesta Machine Company.

ings. There is 50,000 sq. ft. of floor space in these basements which have a depth of 14 ft. The side walls and floors are of reinforced concrete. The basement under the pattern shop, which is 60 ft. wide by 175 ft. long, is used as a general foundry storeroom. The heavier materials are lifted out of this room by electric cranes directly into the foundry. The basement under the pattern storage building is 50 ft. wide and extends the length of the foundry building. This basement is used for storing the different grades of sand used in the foundry. These storerooms have capacity for carrying a six months' supply of sand. By this arrangement sufficient sand can be stored in the fall before freezing weather sets in to supply the foundry throughout the winter. Sand stored in outside sheds invariably freezes to a certain depth, making it necessary for the foundryman to use sand that must be thawed and dried. The sand stored in this basement does not freeze even in zero weather.

The sand is unloaded from the cars into these basements, as indicated in Fig. 13, by way of chutes and through openings in the side walls. Car tracks run on each side of the building. The sand is taken to the foundry by small cars with detachable bodies through tunnels, and is lifted out of the pits at the end of the tunnels by traveling cranes, as is also shown in Fig. 13.

#### Notable Products of the Company.

The plant of the Mesta Machine Company was designed and built especially for the building of heavy duty

engines for blast furnaces, rolling mills and power plants, and also for the building of machinery used for the manufacture of iron and steel. Some of the noteworthy installations are as follows: Five horizontal cross compound blowing engines for the two 600-ton blast furnaces of the Illinois Steel Company, five vertical cross compound blowing engines for the two 600-ton blast furnaces of the Donora plant of the Carnegie Steel Company, 24 blowing engines for the Tennessee Coal, Iron & Railroad Company (said to be the largest group of engines of one make in any plant in the United States), five blowing engines for the Cleveland Furnace Company, two pairs of 55 x 66 in. piston valve reversing engines for the Tennessee Coal, Iron & Railroad Company for driving the blooming and rail mills, one pair of 50 x 60 in. reversing engines for the Illinois Steel Company, three reversing engines for the National Tube Company, two pairs of twin tandem compound reversing engines for the Bethlehem Steel Company, one 44 and 76 in. by 60 in. cross compound engine for the Bethlehem Steel Company (the total weight of this engine was over 1,000,000 lb and some of its individual castings weighed over 100 tons), one large tandem compound engine to drive the rail mill of the Inland Steel Company, one horizontal vertical engine to drive the rail mill of the Tennessee Coal, Iron & Railroad Company, one horizontal vertical Corliss engine which drives the billet mill of the Clairton Works of the Carnegie Steel Company.

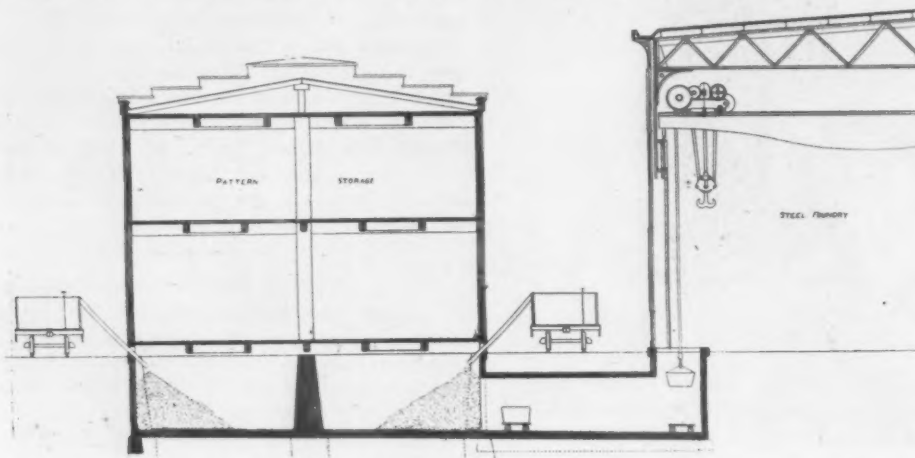


Fig. 13.—Sectional Elevation Showing the Sand Storage and Communication with the Foundry.



The facilities for building engines were strikingly illustrated a few months ago, when a 36 x 72 in. heavy duty Corliss engine with 100-ton flywheel, was completed ready for shipment in 30 days from receipt of order.

The company has also built some of the principal mills of the largest steel plants in the United States. A few of these worthy of mention are as follows: A 44-in. blooming mill for the Bethlehem Steel Company, a 40-in. slabbing mill for the National Tube Company, a 44-in. blooming mill for the La Belle Iron Works, and a large slabbing mill for the Cambria Steel Company.

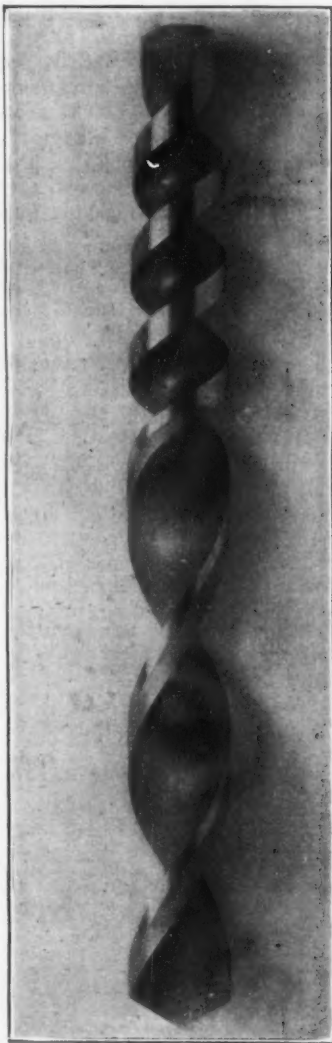
The company has also built some exceptionally large special machinery. One installation of this kind recently built was a 600-ton hot metal mixer for the Tennessee Coal, Iron & Railroad Company, claimed to be the largest mixer ever built.

#### Organization.

In addition to the offices at the works, the company has a main general office in Pittsburgh and branch offices in New York, Chicago and Birmingham. The officers are George Mesta, president; Charles J. Mesta, vice-president; W. D. Rowan, secretary, and J. O. Horning, treasurer.

### The Pratt & Whitney High Power Drill.

A new high-speed drill with which no special chucks or sockets are required has recently been brought out by the Pratt & Whitney Company, Hartford, Conn., which is to be known as the High Power Drill. As shown



The New High Power Drill Made by the Pratt & Whitney Company, Hartford, Conn.

in the illustration, the peculiar feature of the drill is the continuous twist from end to end with the increased twist in the shank, permitting it to be used in the standard Morse or other taper sockets. The drill is

ground on the shank and barrel, so that it has the same accurate alignment as the standard milled drill, as a result of which it will drill with the same accuracy. An even more effective contact with the socket is obtained with the twisted shank than with a full surface shank, and there is therefore less chance of slipping and greater driving power. With this drill the common troubles of breaking of tangs and slipping of drills in sockets are eliminated.

Below are given the results of two tests which were made to determine the efficiency of the drill in machinery steel and cast iron, but no effort was made to find the limit of the tool. The third test was made to determine the effective contact between the shank and the socket and the general strength of the drill.

#### Test No. 1.

Diameter of drill, 1 1/4 in.  
Material drilled, machinery steel, 3 1/2 in. thick.  
Cutting speed per minute, 98 ft.  
Feed per revolution of drill, .0145.  
Inches drilled per minute, 4.2.  
Number of holes drilled, 100.

At this point the drill was removed and found to be in practically as good condition as when the test was commenced.

#### Test No. 2.

Diameter of drill, 1 1/4 in.  
Material drilled, cast iron, 3 in. thick.  
Cutting speed per minute, 127 ft.  
Feed per revolution of drill, .0426.  
Inches drilled per minute, 14.9.  
Number of holes drilled, 211.

At this point the drill was removed and found to be, as before, practically as good as before the test.

#### Test No. 3.

Diameter of drill, 1 in.  
Material drilled, cast iron, 2 1/4 in. thick.  
Cutting speed per minute, 156 ft.  
Feed per revolution of drill, .087.  
Inches drilled per minute, 51.9.

In this test after drilling one hole the drill was removed and was found to be without a sign of a flaw and the cutting edges were still in good condition.

The new High Power drills are made in all sizes from 5/8 to 3 in. diameter. The total length of the smallest is 9 in., of the largest 21 1/2 in. and the intermediate sizes in proportion.

### The Break in the British Galvanized Sheet Market.

In connection with the recent action of the Galvanized Sheet Association in Great Britain, discontinuing its price agreement, it is stated that the association exercised almost complete control over the British market for galvanized sheets for more than four years. The annual capacity in galvanized product of the plants represented in the association was 450,000 to 500,000 tons, and in 1907 the exports were valued at more than \$34,000,000, falling to \$27,000,000 last year. For the first half of 1909 they were \$16,000,000. Following the dissolution of the association the price of No. 24 galvanized sheets fell from £12 10s. to £10 10s., and later £10 was done. The springing up of new competition, particularly from firms in Scotland, South Wales and Lancashire, led to the breaking up of the agreement, the new firms refusing to co-operate with the association. The low prices made are much below the point of possible profit to many manufacturers, but it is questionable if even this drastic action will bring about any early efforts for a new and more inclusive agreement. The market for black sheets has also naturally been demoralized.

The Engineering Standards Committee has issued the British standard specifications for cast iron pipes for hydraulic power. Two classes of pipe are provided for, the greater number falling under class A, for pressures between 700 and 900 lb. per square inch. Class B takes in pipe for pressures from 900 to 1200 lb. per square inch. Standard sizes of lengths, tees and bends are also given in the report.

# TARIFF DUTIES COMPARED.

## A Comparison of the Metal Duties in the Dingley Act with Those in the New Law.

Below is given a comparison of the duties in the metal schedule of the Dingley and the Payne tariff acts. In some instances a new classification has been adopted, which makes the comparison somewhat difficult to tabu-

late. The expression n. e. means not separately enumerated. The ton specified in both tariff acts is the ton of 2240 pounds.

### Schedule C.—Metals and Manufactures of.

Paragraph of new law.	Classification.	Dingley law.	New law.
117.	Iron ore, including manganiferous iron ore, and the dross or residuum from burnt pyrites.	40c. ton.....	15c. ton.
	Basic slag, ground or unground.	\$1 ton.....	Free of duty.
118.	Iron in pigs, kentledge, spiegeleisen, and ferromanganese.	\$4 ton.....	\$2.50 ton.
	Scrap iron and steel, waste or refuse, fit only to be remanufactured.	\$4 ton.....	\$1 ton.
119.	Bar iron:		
	Rolled or hammered, comprising—		
	Flats not less than 1 inch wide nor less than $\frac{3}{4}$ of 1 inch thick; round iron not less than 7-16 of 1 inch in diameter; square iron;.....	6-10c. lb.....	3-10c. lb.
	Muck bars.....	5-10c. lb.....	3-10c. lb.
120.	Bars or shapes of rolled or hammered iron, n. s. p. f., and round iron, in coils or rods, less than 7-16 of 1 inch in diameter.....	8-10c. lb.....	6-10c. lb.
	Slabs, blooms, loops, or other forms less finished than iron in bars and more advanced than pig, except castings.....	5-10c. lb.....	4-10c. lb.
	Bars, blooms, billets, slabs, or loops, in the manufacture of which charcoal is used as fuel.....	\$12 ton.....	\$8 ton.
121.	Beams, girders, joists, angles, channels, car-truck channels, T columns and posts or parts or sections of columns and posts, deck and bulb beams, and building forms and all other structural shapes of iron or steel, but not assembled, or manufactured, or advanced beyond hammering, rolling, or casting:		
	Valued 9-10c. lb. or less.....	5-10c. lb.....	3-10c. lb.
	Valued over 9-10c. lb.....	5-10c. lb.....	4-10c. lb.
122.	Boiler or other plate iron or steel (except crucible plate steel and saw plates), not thinner than No. 10 wire gauge, sheared or unsheared, and skelp iron or steel sheared or rolled in grooves:		
	Valued 8-10c. lb. or less.....	5-10c. lb.....	3-10c. lb.
	Valued above 8-10c. lb., but not above 1c. lb.....	(n. e.).....	4-10c. lb.
	Valued above 1c. and not above 2c. lb.....	6-10c. lb.....	5-10c. lb.
	Valued above 2c. and not above 3c. lb.....	1c. lb.....	6-10c. lb.
	Valued over 4c. lb.....	25%.....	20%.
	Cold rolled, smoothed only, not polished, valued above 2c. and not above 4c. lb.....	1 2-10c. lb.....	7-10c. + 2-10c. lb.
123.	Anchors, or parts of.....	1½c. lb.....	1c. lb.
	Forgings of iron or steel, or combined iron and steel, n. s. p. f., but not machined, tooled, or otherwise advanced in condition by any process or operation subsequent to the forging process.....	35%.....	30%.
	Anti-friction balls, ball bearings, roller bearings, of iron or steel, or of combined iron and steel.....	45%.....	45%.
124.	Hoop, band, or scroll iron or steel not otherwise provided for, valued at 3c. lb. or less, 8 inches or less in width and less than $\frac{3}{4}$ inch thick:		
	Not thinner than No. 10 wire gauge.....	5-10c. lb.....	3-10c. lb.
	Thinner than No. 10 and not thinner than No. 20 wire gauge.....	6-10c. lb.....	4-10c. lb.
	Thinner than No. 20 wire gauge.....	8-10c. lb.....	6-10c. lb.
	Hoop or band iron, or hoop or band steel, flared, splayed, or punched, with or without buckles or fastenings, and barrel hoops of iron or steel:		
	Not thinner than No. 10 wire gauge.....	6-10c. lb.....	4-10c. lb.
	Thinner than No. 10 and not thinner than No. 20 wire gauge.....	7-10c. lb.....	5-10c. lb.
	Bands and strips of steel over 12 feet long, n. s. p. f.,.....	(n. e.).....	35%.
125.	Hoop or band iron, or hoop or band steel, cut to lengths, or wholly or partly manufactured into hoops or ties, coated or not coated with paint or any other preparation, with or without buckles or fastenings, for baling cotton or any other commodity.....	5-10c. lb.....	3-10c. lb.
126.	Bars or rails for railways of iron or steel.....	\$7.84 ton.....	\$3.92 ton.
	Railway fish plates or splice bars, of iron or steel.....	4-10c. lb.....	3-10c. lb.
127.	Sheets of iron or steel, common or black, and skelp iron or steel, valued at 3c. lb. or less:		
	Thinner than No. 10 and not thinner than No. 20 wire gauge.....	7-10c. lb.....	5-10c. ton.
	Thinner than No. 20 and not thinner than No. 25 wire gauge.....	8-10c. lb.....	6-10c. lb.
	Thinner than No. 25 and not thinner than No. 32 wire gauge.....	1 1-10c. lb.....	8-10c. lb.
	Thinner than No. 32 wire gauge.....	1 1-10c. lb.....	9-10c. lb.
	Sheet iron or sheet steel, corrugated or crimped.....	1 2-10c. lb.....	8-10c. lb.
	All valued at more than 3c. lb.....	(n. e.).....	30%.
128.	Sheets or plates of iron or steel (excepting what are commercially known as tin plates,terne plates, and taggers tin) and all iron or steel sheets or plates galvanized or coated with zinc or spelter, or other metals, or any alloy of these metals:		
	Thinner than No. 10 and not thinner than No. 20 wire gauge.....	9-10c. lb.....	7-10c. lb.
	Thinner than No. 20 and not thinner than No. 25 wire gauge.....	1c. lb.....	8-10c. lb.
	Thinner than No. 25 and not thinner than No. 32 wire gauge.....	1 3-10c. lb.....	1c. lb.
	Thinner than No. 32 wire gauge.....	1 4-10c. lb.....	1 1-10c. lb.
	Sheet iron or sheet steel:		
	Corrugated or crimped, galvanized or coated with zinc, spelter, or other metals, or any alloy of those metals.....	1 3-10c. lb.....	1c. lb.
	Sheets or plates composed of iron, steel, copper, nickel, or other metal with layers of other metal or metals imposed therein by forging, hammering, rolling or welding.....	(n. e.).....	40%.
129.	Sheet iron or sheet steel, polished, planished, or glanced.....	2c. lb.....	1½c. lb.
	Sheets and plates pickled or cleaned by acid, or by any other material or process, or cold rolled, smoothed only, not polished:		
	Thinner than No. 10 and not thinner than No. 20 wire gauge.....	9-10c. lb.....	7-10c. lb.
	Thinner than No. 20 and not thinner than No. 25 wire gauge.....	1c. lb.....	8-10c. lb.
	Thinner than No. 25 and not thinner than No. 32 wire gauge.....	1 3-10c. lb.....	1c. lb.
130.	Tin plates; Sheets or plates of iron or steel or taggers iron, or steel coated with tin or lead, or with a mixture of which these metals are a component part, by the dipping or any other process, and commercially known as tin plates,terne plates, and taggers tin.....	1½c. lb.....	1 2-10c. lb.
131.	Steel ingots, cogged ingots, blooms and slabs, by whatever process made; die blocks or blanks; billets and bars and tapered or beveled bars; mill shafting; pressed, sheared or stamped shapes (not advanced in value or condition by any process or operation subsequent to the process of stamping); hammer molds or swaged steel; gun-barrel molds not in bars; alloys used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam, or iron-molded steel castings; and steel in all forms and shapes not specially provided for:		
	Valued $\frac{3}{4}$ c. lb. or less.....	3-10c. lb.....	7-40c. lb.
	Valued above $\frac{3}{4}$ c. and not above 1 3-10c. lb.....	4-10c. to 7-10	3-10c. lb.
	Valued above 1 3-10c. and not above 1 8-10c. lb.....	c. lb.....	5-10c. lb.
	Valued above 1 8-10c. and not above 2 2-10c. lb.....	7-10c. lb.....	6-10c. lb.
	Valued above 2 2-10c. and not above 3c. lb.....	9-10c. lb.....	8-10c. lb.
	Valued above 3c. and not above 4c. lb.....	1 2-10c. lb.....	1 1-10c. lb.
	Valued above 4c. and not above 7c. lb.....	1 3-10c. lb.....	1 2-10c. lb.
	Valued above 7c. and not above 10c. lb.....	2c. lb.....	1 9-10c. lb.
	Valued above 10c. and not above 13c. lb.....	2 4-10c. lb.....	2 3-10c. lb.
	Valued above 13c. and not above 16c. lb.....	2 8-10c. lb.....	2 7-10c. lb.
	Valued above 16c. and not above 24c. lb.....	4 7-10c. lb.....	4 6-10c. lb.
	Valued above 24c. and not above 32c. lb.....	6c. lb.....	6c. lb.
	Valued above 32c. and not above 40c. lb.....	7c. lb.....	7c. lb.
	Valued above 40c. lb.....	20%.....	20%.



Paragraph of new law.	Classification.	Dingley law. (n. e.)	New law.
132. Steel wool or steel shavings.....		(n. e.)	40%.
133. Grit, shot and sand, made of iron or steel, that can be used only as abrasives....		(n. e.)	1c. lb.
143. Wire rods: Rivet, screw, fence and other iron or steel wire rods, whether round, oval, flat, square or in any other shape, and nail rods in coils or otherwise, not smaller than No. 6 wire gauge:			
Untempered or untreated—			
Valued 4c. or less per lb.....	4-10c. lb.....		3-10c. lb.
Valued over 4c. lb.....	1/4c. lb.....		6-10c. lb.
Tempered or treated or partly manufactured, 1/4c. lb. additional to rate on untempered.			
135. Round iron or steel wire, not smaller than No. 13 wire gauge.....	1 1/4c. lb.....		1c. lb.
Smaller than No. 13 and not smaller than No. 16 wire gauge.....	1 1/4c. lb.....		1 1/4c. lb.
Smaller than No. 16 wire gauge.....	2c. lb.....		1 1/4c. lb.
But not less than 35% on any of foregoing.....	40%.		35%.
All wire of iron or steel, or other metal except gold or silver, covered with cotton, silk, or other material, corset clasps, corset steels, dress steels, and all flat wires and steel in strips not thicker than No. 15 wire gauge and not exceeding 5 inches in width, and all wire n. s. p. f.....	45%.		35%.
Iron and steel wire coated by dipping or galvanizing, 2-10c. lb. in addition to rate on wire of which made.			
Articles manufactured wholly or in chief value of any wires provided for in this paragraph pay maximum rate on any wire used in their manufacture and 1c. lb. in addition.			
No article made or composed of wire to pay less than 40%.			
Telegraph, telephone and other wires and cables composed of metal and rubber, or of metal, rubber and other materials.....			40%.
Barbed fence wire.....	(n. e.)		3/4c. lb.
Wire heddles.....	(n. e.)		25c. M. and 40%.
137. Steel ingots, cogged ingots, blooms, and slabs, by whatever process made; die blocks or blanks; billets and bars and tapered or beveled bars; mill shafting; pressed, sheared or stamped shapes; hammer molds or swaged steel; gun-barrel molds not in bars; alloy used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam, or iron molded steel castings; and steel in all forms and shapes not specially provided for: Cold rolled, cold drawn, cold hammered, or polished in any way, in addition to ordinary process, 1/4c. lb. in addition to rates on hot rolled.			
Sheets and plates not specially provided for, cold hammered, blued, brightened, tempered, or polished by any process to such perfected surface finish, or polish better than the grade of cold rolled, smoothed only, hereinbefore provided for, 4-10c. lb. in addition to rates on sheets or strips of common or block finish.			
Steel circular saw plates, 1/4c. in addition to rates on steel plates.....	8-10c. lb.....		1 1/4c. lb.
140. Anvils.....	1 1/4c. lb.....		1 1/4c. lb.
141. Automobiles, and finished parts, not including tires.....	45%.		45%.
Bicycles, and motor cycles, and finished parts, not including tires.....	45%.		45%.
142. Axles, or parts of, axle bars, axle blanks, or forgings for axles, of iron or steel, without reference to the stage or state of manufacture, valued at not more than 6c. lb.....	1c. lb.....		1/4c. lb.
143. Hammers and sledges (blacksmiths'), track tools, wedges, and crowbars, of iron or steel.....	1 1/4c. lb.....		1 1/4c. lb.
144. Bolts, with or without threads, or nuts, or bolt blanks, and finished hinges or hinge blanks, of iron or steel.....	1 1/4c. lb.....		1 1/4c. lb.
145. Card clothing not actually and permanently fitted to and attached to carding machines or to parts thereof at the time of importation:			
Manufactured with round iron or untempered, round steel wire.....	20c. square foot.....		20c. square foot.
Do., with tempered round steel wire.....	45c. square foot.....		45c. square foot.
Manufactured with plated wire, or other than round iron or steel wire or with felt face, wool face, or rubber face cloth containing wool.....	20c. square foot.....		55c. square foot.
146. Cast iron pipe of every description.....	4-10c. lb.....		1/4c. lb.
147. Cast-iron vessels, plates, stove plates, andirons, sadirons, tailors' irons, hatters' irons, and castings of iron, not specially provided for.....	8-10c. lb.....		8-10c. lb.
All castings of iron or cast-iron plates which have been chiseled, drilled, machined, or otherwise advanced in condition by processes or operations subsequent to the casting process but not made up into articles, 2-10c. per lb. additional.			
148. Malleable-iron castings, not specially provided for.....	9-10c. lb.....		7-10c. lb.
149. Cast hollow ware, coated, glazed, or tinned.....	2c. lb.....		1 1/4c. lb.
150. Chain or chains, made of iron or steel:			
Not less than 3/4 inch in diameter.....	1 1/4c. lb.....		3/4c. lb.
Less than 3/4 inch and not less than 1/2 inch in diameter.....	1 1/4c. lb.....		1 1/4c. lb.
Less than 1/2 inch and not less than 5-16 inch in diameter.....	1 1/4c. lb.....		1 6-8c. lb.
Less than 5-16 inch in diameter.....	3c. lb.....		3c. lb.
Provided that no chain shall pay less than.....	45%.		45%.
151. Tubes, pipes, flues, or stays, lap-welded, butt-welded, seamed, or jointed, not thinner than No. 16 wire gauge:			
Not less than 3/4 inch in diameter.....	2c. lb.....		1c. lb.
Less than 3/4 inch and not less than 1/4 inch.....	1 1/4c. lb.....		1 1/4c. lb.
Less than 1/4 inch in diameter.....	2c. lb.....		2c. lb.
Provided that no tubes, pipes, flues, or stays of charcoal iron shall pay less than.....	1 1/4c. lb.....		1 1/4c. lb.
Cylindrical or tubular tanks or vessels, for holding gas, liquids, or other material, whether full or empty.....			30%.
Flexible metal tubing or hose, not specially provided for, whether covered with wire or other material, or otherwise, including any appliances or attachments affixed thereto.....			30%.
Welded cylindrical furnaces, tubes, or flues made from plate metal and corrugated, ribbed, or otherwise reinforced against collapsing pressure.....	2 1/4c. lb.....		2c. lb.
All other iron or steel tubes, finished, not specially provided for.....	35%.		30%.
152. Pen or pocket knives, clasp, pruning and budding knives, or parts of, and erasers, manicure knives, or parts of, wholly or partly manufactured:			
Valued not more than 40c. per dozen.....	40%.		40%.
Valued more than 40c. and not exceeding 50c. per dozen.....	1c. each and 40%.		1c. each and 40%.
Valued more than 50c. and not exceeding \$1.25 per dozen.....	5c. each and 40%.		5c. each and 40%.
Valued more than \$1.25 and not exceeding \$3 per dozen.....	10c. each and 40%.		10c. each and 40%.
Valued more than \$3 per dozen.....	20c. each and 40%.		20c. each and 40%.
Any of the foregoing knives or erasers, if imported in the condition of assembled, but not fully finished, shall be dutiable at not less than the rate of duty herein imposed upon fully finished knives and erasers of the same quality and material, but not less in any case than 10c. each and 40%.			
Blades, handles, and other parts of.....	5c. each and 40%.		5c. each and 40%.
Razors, finished—			
Valued at less than \$1 per dozen.....			35%.
Valued at \$1 and less than \$1.50 per dozen.....	50c. doz. and 15%.		6c. each and 35%.
Valued at \$1.50 and less than \$2 per dozen.....	\$1 doz. and 15%.		10c. each and 35%.
Valued at \$2 and less than \$3 per dozen.....	\$1 doz. and 15%.		12c. each and 35%.
Valued at \$3 or more per dozen.....	\$1 doz. and 15%.		15c. each and 35%.
Provided, That blades, handles, and unfinished razors shall pay no less duty than that imposed on finished razors valued at \$2 per dozen.			
Scissors and shears, and blades for, finished or unfinished—			
Valued not more than 50c. per dozen.....	15c. doz. and 15%.		15c. doz. and 15%.
Valued more than 50c. and not more than \$1.75 per dozen.....	50c. doz. and 15%.		50c. doz. and 15%.
Valued more than \$1.75 per dozen.....	75c. doz. and 25%.		75c. doz. and 25%.
153. Swords, sword blades, and side arms (bayonets).....	35%.		50%.
154. Table, carving, cooks', kitchen, bread, butter, vegetable, fruit, and cheese knives, forks, and steels, finished or unfinished—			
With handles of mother-of-pearl, shell, or ivory (silver, nicked silver, or other metal than iron or steel).....	16c. each and 15%.		14c. each and 15%.
With handles of deer horn.....	12c. each and 15%.		10c. each and 15%.
With handles of hard rubber, solid bone, celluloid, or any pyroxiline material.....	5c. each and 15%.		4c. each and 15%.
With handles of any other material.....	1 1/4c. each and 15%.		1c. each and 15%.
Any knives, forks, or steels, imported without handles.....			40%.
None of foregoing to pay less than 40%.			
Butchers', hunting, plumbers', painters', palette artists' (carpenters' bench, curriers', drawing, farriers', fleshing, hay, tanners'), and shoe knives, finished or unfinished—			
With handles of mother-of-pearl, shell, or ivory (silver, nicked silver, or other metal than iron or steel).....	16c. each and 15%.		14c. each and 15%.
With handles of deer horn.....	12c. each and 15%.		10c. each and 15%.
With handles of hard rubber, solid bone, celluloid, or any pyroxiline material.....	5c. each and 15%.		4c. each and 15%.
With handles of any other material.....	1 1/4c. each and 15%.		1c. each and 15%.
Any knives, forks, or steels, imported without handles.....			40%.
Provided, That no duty shall be less than 40%.			



Paragraph of new law.	Classification.	Dingley law.	New law.
155.	Files, file blanks, rasps, and floats of all cuts and kinds: 2½ inches in length and under..... Over 2½ and not over 4½ inches in length..... Over 4½ and under 7 inches in length..... 7 inches in length and over.....	30c. per doz..... 50c. per doz..... 75c. per doz..... \$1 per doz.....	25c. doz..... 47½c. doz..... 62½c. doz..... 77½c. doz.....
156.	Firearms: Muskets, muzzle-loading shotguns, rifles, and parts of.....	25% .....	25% .....
157.	Shotguns, double-barreled, sporting, breech-loading, and combination shotguns and rifles: Valued not more than \$5 each..... Valued more than \$5 and not more than \$10 each..... Valued more than \$10 each..... Shotguns, single-barreled, breech-loading, or parts of, not specially provided for..... Double barrels for sporting, breech-loading, shotguns and rifles, further advanced in manufacture than rough-bored only, and stocks for same..... All other parts of guns or rifles and fittings for stocks or barrels..... Pistols, automatic, magazine, or revolving, or parts of.....	\$1.50 each and 15% .. \$4 each and 15% .. \$6 each and 35% .. \$1 each and 35% .. \$3 each and 35% .. 50% .. 75c. each and 25% ..	\$1.50 each and 15% .. \$4 each and 15% .. \$6 each and 35% .. \$1 each and 35% .. \$3 each and 35% .. 50% .. 75c. each and 25% ..
158.	Table, kitchen, and hospital utensils, or other similar hollow ware, enameled or glazed with vitreous glasses, but not ornamented or decorated with lithographic or other printing.....	40% .....	40% .....
159.	Nails and spikes, cut, of iron or steel.....	6-10c. per lb.....	4-10c. per lb.
160.	Nails, horseshoe, hob, and all other wrought-iron or steel nails, not specially provided for.....	2½c. per lb.....	1½c. per lb.
161.	Nails, wire, made of wrought iron or steel— Not less than 1 inch in length and not lighter than No. 16 wire gauge..... Do., less than 1 inch and lighter than No. 16 wire gauge.....	¼c. per lb..... ¼c. per lb..... 1c. per lb.....	4-10c. per lb. ¼c. per lb. ¼c. per lb.
162.	Spikes of wrought iron or steel.....	1c. per lb.....	¼c. per lb.
163.	Nuts and washers, of wrought iron or steel.....	1c. per lb.....	¼c. per lb.
163.	Horse, mule, or ox shoes, of wrought iron or steel.....	1c. per lb.....	¼c. per lb.
163.	Tacks, brads, or sprigs, cut— Not exceeding 16 ounces to the thousand..... Exceeding 16 ounces to the thousand.....	1¼c. per M..... 1¼c. per lb.....	¾c. per M. ¾c. per lb.
164.	Needles: For knitting (embroidery) or sewing machines..... Latch needles..... Crochet and tape needles, knitting, and all others not specially provided for, and bodkins of metal.....	\$1 per M. and 25% .. \$1 per M. and 25% .. 25% .....	\$1 per M. and 25% .. \$1.15 per M and 35% .. 25% .....
165.	Fishhooks, fishing rods and reels, artificial flies, artificial baits, snelled hooks, and all other fishing tackle or parts thereof, not specially provided for in this section, except fishing lines, fishing nets and seines.....	25% .....	45% .....
166.	Engraved plates of steel plates, electrotypes and stereotype, and plates of other material than steel, engraved for printing..... Plates of iron or steel, engraved or fashioned for use in the production of designs, patterns, or impressions on glass in the process of manufacturing plate or other glass..... Lithographic plates of stone or other material, engraved, drawn, or prepared, and wet transfer paper, or paper prepared wholly with glycerin, or glycerin combined with other materials, containing the imprints taken from the lithographic plates.....	25% .....	20% .....
167.	Rivets or studs and steel points, lathed, machined, or brightened, and rivets or studs for nonskidding automobile tires..... Rivets of iron or steel, n. s. p. f.....	(n. e.)..... 2c. per lb.....	25% c. 45% .....
168.	Saws: Circular saws..... Cross-cut saws..... Hand, hack, and other saws, not specially provided for..... Mill saws..... Pit and drag saws..... Steel band saws, finished or further advanced than tempered and polished.....	25% .....	20% .....
169.	Screws, commonly called wood screws: ½ inch or less in length..... Over ½ inch and not more than 1 inch in length..... Over 1 inch and not more than 2 inches in length..... More than 2 inches in length.....	(n. e.)..... 8½c. lb..... 6c. lb..... 4c. lb.....	10c. lb. 8c. lb. 5c. lb. 3c. lb.
170.	Umbrella and parasol ribs and stretchers, of iron, steel, or other metal, in frames or otherwise..... Tubes for umbrellas, wholly or partly finished.....	50% .....	50% .....
171.	Wheels, or parts of, with axles fitted in, and steel-tired wheels, for railway purposes, and iron or steel locomotive, car or other railway tires, or parts of, wholly or partly manufactured..... Ingots, cogged ingots, blooms, or blanks, for railway wheels or tires, without regard to the degree of manufacture.....	1¼c. lb..... 1¼c. lb.....	1¼c. lb. 1c. lb.
172.	Aluminum: In crude form (aluminum scrap), and alloys of any kind in which aluminum is the component material of chief value..... Plates, sheets, bars and rods..... Barium, calcium, magnesium, sodium, and potassium, and alloys of which said metals are the component material of chief value.....	8c. lb..... 13c. lb..... ¾c. lb.....	7c. lb. 11c. lb. 3c. lb. and 25% ..
173.	Antimony, as regulus or metal..... Antimony ore, stibnite, and matte containing antimony (on antimony contents)..... Antimony, oxide of.....	¾c. lb..... (n. e.)..... (n. e.).....	1¼c. lb. 1c. lb. 1¼c. lb. and 25% ..
174.	Argentine, albata, or German silver, unmanufactured.....	25% .....	25% .....
175.	Bronze powder (brocades, flitters, and metallics)..... Bronze, or Dutch metal, in leaf, in packs of 100 leaves..... Aluminum, in leaf, in packs of 100 leaves.....	12c. lb..... 6c. pack..... 6c. pack.....	12c. lb. 6c. 100 leaves. 6c. 100 leaves.
176.	Copper: Plates, rolled, called braziers' copper, sheets, rods, pipes and copper bottoms..... Sheathing, or yellow metal, of which copper is the component material of chief value, and not composed wholly or in part of iron, ungalvanized.....	2¼c. lb..... 2c. lb.....	2¼c. lb. 2c. lb.
177.	Gold leaf, in packs of 500 leaves..... The foregoing rate applies to leaf not exceeding in size the equivalent of 3½ by 3½ inches; additional duties in the same proportion shall be assessed on leaf exceeding in size said equivalent.	\$1.75 pack.....	35c. 100 lvs, \$1.75 pk
178.	Silver leaf, in packs of 500 leaves.....	75c. pack.....	10c. 100 lvs, 50c. pk
179.	Tinsel wire, lame or lahn, made wholly or in chief value of gold, silver, or other metal..... Bullions and metal threads made wholly or in chief value of tinsel wire, lame or lahn..... Fabrics, laces, embroideries, braids, galloons, trimmings, toys, or other articles made wholly or in chief value of tinsel wire, lame lahn bullion or metal threads..... Ribbons, beltings and ornaments, added to laces, &c.....	5c. lb..... 5c. lb. and 35% .. 60% .. 5¼c. lb. and 15% ..	5c. lb. 5c. lb. and 30% .. 15c. lb. and 60% .. 15c. lb. and 60% ..
180.	Hooks and eyes, metallic, whether loose, carded or otherwise, including weight of cards, cartons and immediate wrappings and labels.....	1¼c. lb.....	4¼c. and 15% ..
181.	Lead-bearing ore of all kinds (lead contents).....	2¼c. lb.....	1¼c. lb.
182.	Base bullion..... Pigs and bars (dross), bullion molten and old, refuse lead, run into blocks and bars, and old scrap lead fit only to be remanufactured, and dross..... Sheets, pipes, shot, glaziers' lead and lead wire.....	2¼c. lb..... 20% .....	2¼c. lb. 29c. lb.
183.	Metals unwrought, and metallic mineral substances, in a crude state, not specially provided for..... Monazite sand and thorite..... Thorium, oxide of and salts of, and gas mantles-treated with chemicals or metallic oxides..... Gas mantle scrap, consisting in chief value of metallic oxides.....	20% .....	20% .....
184.	Chromium or chromium metal, ferrochromium, ferromolybdenum, ferrophosphorus, ferrotitanium, ferrotungsten, ferrovanadium, molybdenum, titanium, tantalum, tungsten or wolfram metal: Valued at \$200 per ton or less..... Valued at more than \$200 per ton..... Ferrosilicon containing not more than 15 per cent. of silicon..... Do., containing over 15 per cent. of silicon.....	20% .....	25% .. 20% .. \$4 ton..... 20% ..
185.	Nickel, nickel oxide, alloy of any kind in which nickel is the material of chief value, in pigs, ingots, bars, rods, plates, but not rolled or drawn..... Nickel sheets, strips and wire.....	6c. lb..... 6c. lb.....	6c. lb. 35% ..
186.	Pens, metallic, except gold pens..... Do., with nib and barrel in one piece.....	12c. gross..... (n. e.).....	12c. gross. 15c. gross.

Paragraph of new law.	Classification.	Dingley law.	New law.
187. Penholder tips, and penholders, or parts of.....	25%	25%	5c. gross and 25%.
Gold pens.....	25%	25%	25%.
Fountain pens, stylographic pens.....	(n. e.).....	(n. e.).....	30%.
Combination penholders, comprising penholder, pencil, rubber eraser, automatic stamp, or other attachment.....			40% c.
Provided, That pens and penholders shall be assessed for duty separately.			
188. Pins, solid heads, without ornamentation, including hair, safety, hat, bonnet, and shawl pins, composed of brass, copper, iron, steel or other base metal, not plated, not jewelry.....	35%	35%	35%.
189. Quicksilver.....	7c. lb.....	7c. lb.....	7c. lb.
190. Tungsten-bearing ores of all kinds.....	(n. e.).....	(n. e.).....	10%.
191. Type metal, on lead contents.....	11c. lb.....	11c. lb.....	11c. lb.
New types.....	25%	25%	25%.
192. Watch movements, including time detectors, in cases or not:			
Having not more than 7 jewels.....	35c. each and 25%.	35c. each and 25%.	75c. each.
Having more than 7 and not more than 11 jewels.....	50c. each and 25%.	50c. each and 25%.	\$1.35 each.
Having more than 11 and not more than 15 jewels.....	75c. each and 25%.	75c. each and 25%.	\$1.85 each.
Having more than 15 and not more than 17 jewels.....	\$1.25 each and 25%.	\$1.25 each and 25%.	\$1.25 each and 25%.
Having more than 17 jewels.....	\$3 each and 25%.	\$3 each and 25%.	\$3 each and 25%.
Watch cases and parts of watches, chronometers, box or ship.....	40%	40%	40%.
Lever clock movements having jewels in the escapement, and clocks containing such movements.....			\$1 each and 40%.
All other clocks and parts thereof, not otherwise provided for, whether separately packed or otherwise, not composed wholly or in part of china, porcelain, parian, bisque, or earthen ware.....	40%	40%	40%.
Jewels for use in the manufacture of watches or clocks.....	10%	10%	10%.
Enameled dials for watches or other instruments.....	(n. e.).....	(n. e.).....	3c. each and 40%.
193. Zinc-bearing ore of all kinds, including calamine, containing less than 10% of zinc.....	20%	20%	Free.
Containing over 10% and under 20% of zinc (on zinc contents).....	20%	20%	1/4c. lb.
Containing 20% or more of zinc, but less than 25%.....	20%	20%	1/4c. lb.
Containing 25% of zinc or more.....	20%	20%	1c. lb.
194. Zinc:			
In blocks or pigs, and zinc dust.....	11c. lb.....	11c. lb.....	11c. lb.
In sheets.....	2c. lb.....	2c. lb.....	11c. lb.
In sheets, coated or plated with nickel or other metal or solutions.....	2c. lb.....	2c. lb.....	11c. lb.
Old and worn out, fit only to be remanufactured.....	1c. lb.....	1c. lb.....	1c. lb.
195. Cans, boxes, packages and other containers, of all kinds, except those hermetically sealed, composed wholly or in chief value of metal lacquered or printed by any process of lithography whatever, filled or unfilled, and whether their contents be dutiable or free.....			4c. lb. and 35%.
Provided, That none of the foregoing articles shall pay a less rate of duty than 55 per cent. ad valorem.			
196. Bottle caps of metal, not colored, waxed, lacquered, enameled, lithographed, or embossed in color.....	45%	45%	1/4c. lb. and 40%.
Colored, lacquered, enameled, lithographed, or embossed in color.....	45%	45%	55%.
197. Cash registers, jute manufacturing machinery, linotype and all typesetting machines, machine tools, printing presses, sewing machines, typewriters, and all steam engines.....	45%	45%	30%.
Embroidery machines and lace-making machines, including machines for making lace curtains, nets or nettings.....	45%	45%	45%.
Provided, That machines for the manufacture of linen or cloth from flax or flax fiber shall come in free until January 1, 1912.			
198. Nippers and pliers of all kinds, except blacksmiths' tongs, surgical and dental instruments, or parts thereof, wholly or partly manufactured.....	45%	45%	8c. lb. and 40%.
199. Articles or wares not specially provided for, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum or other metal, wholly or partly manufactured.....	45%	45%	45%.

## Tariff Provisions of Interest to the Metal Trades.

In addition to the provisions embodied in Schedule C of the new Tariff act, the free list contains much of interest to the metal trades. Again, items occur in Schedule N, "sundries," which have reference to metal products. Separate sections of the act also cover subjects upon which iron and steel and other manufacturers may desire to be informed upon. These are reproduced, in the above order, as follows:

### The Free List, As Far As It Relates to Metals, &c.

495. Apatite.  
500. Articles the growth, produce or manufacture of the United States, not including animals, when returned after having been exported, without having been advanced in value or improved in condition by any process of manufacture or other means; casks, barrels, carboys, bags, and other containers or coverings of American manufacture exported filled with American products; or exported empty and returned filled with foreign products, including shooks and staves when returned as barrels or boxes; also quicksilver flasks or bottles, iron or steel drums used for the shipment of acid, of either domestic or foreign manufacture, which shall have been actually exported from the United States; but proof of the identity of such articles shall be made, under general regulations to be prescribed by the Secretary of the Treasury, but the exemption of bags from duty shall apply only to such domestic bags as may be imported by the exporter thereof, and if any such articles are subject to internal-revenue tax at the time of exportation, such tax shall be proved to have been paid before exportation and not refunded; photographic dry plates or films of American manufacture, except moving picture films exposed abroad, whether developed or not, and films from moving-picture machines, light struck or otherwise damaged, or worn out, so as to be unsuitable for any other purpose than the recovery of the constituent materials, provided the basic films are of American manufacture, but proof of the identity of such articles shall be made under general regulations to be prescribed by the Secretary of the Treasury: Provided, That this paragraph shall not apply to any article upon which an allowance of drawback has been made, the reimportation of which is hereby prohibited except upon payment of duties equal to the drawbacks allowed; or to any article manufactured in bonded warehouse and exported under any provision of law: And provided further, That when manufactured tobacco which has been exported without payment of internal revenue-tax shall be reimported it shall be retained in

the custody of the Collector of Customs until internal revenue stamps in payment of the legal duties shall be placed thereon.

- 501. Asbestos, unmanufactured.
- 508. Bells, broken, and bell metal broken and fit only to be remanufactured.
- 511. Bismuth.
- 521. Brass, old brass, clippings from brass or Dutch metal, all the foregoing, fit only for remanufacture.
- 524. Bullion, gold or silver.
- 528. Cadmium.
- 530. Cerium, cerite, or cernum ore.
- 531. Chalk, crude, not ground, bolted, precipitated, or otherwise manufactured.
- 532. Chromate of iron or chromic ore.
- 534. Clay: Common blue clay and Gross-Almerode glass-put clay, in cases or casks suitable for the manufacture of crucibles and glass melting pots or tank blocks.
- 535. Coal, anthracite, and coal stores of American vessels, but none shall be unloaded.
- 536. Coal tar, crude, pitch of coal tar, and products of coal tar known as dead or creosote oil, benzol, toluol, naphthalin, xylol, phenol, cresol, toluidine, xylidin, cumidin, vinotrotoluol, binitrobenzol, benzidin, tolidin, dianisidin, naphtol, naphtylamin, diphenylamin, benzaldehyde, benzyl chloride, resorcin, nitro-benzol, and nitro-toluol, naphtyl-aminsulfoacids and their sodium or potassium salts, naphtholsulfoacids and their sodium or potassium salts, amidona-phtholsulfoacids and their sodium or potassium salts, amidosalicylic acid, binitrochlorbenzol, diamidostilbendisulfoacid, metanilic acid, paranitranilin, dimethylanilin; all the foregoing not medicinal, and colors or dyes.
- 537. Cobalt and cobalt ore.
- 542. Coins, of gold, silver, copper, or other metal.
- 544. Copper ore; regulus of, and black or coarse copper, and copper cement; old copper, fit only for remanufacture, clippings from new copper, and copper in plates, bars, ingots, or pigs, not manufactured or specially provided for in this section.
- 545. Composition metal of which copper is the component material of chief value, not specially provided for in this section.
- 549. Cryolite, or kryolith.
- 551. Curling stones, or quoits, and curling-stone handles.
- 556. Miners' diamonds, whether in their natural form or broken, and bort; any of the foregoing not set, and diamond dust.
- 561. Emery ore and corundum.
- 586. Hones and whetstones.
- 589. Horns and parts of, including horn strips and tips, unmanufactured.
- 595. Iridium, osmium, palladium, rhodium, and ruthenium and native combinations thereof with one another or with platinum.



596. Ivory tusks in their natural state or cut vertically across the grain only, with the bark left intact, and vegetable ivory in its natural state.

612. Lifeboats and life-saving apparatus specially imported by societies incorporated or established to encourage the saving of human life.

618. Magnesite, crude or calcined, not purified.

619. Manganese, oxide and ore of.

624. Medals of gold, silver or copper, and other metallic articles actually bestowed as trophies or prizes, and received and accepted as honorary distinctions.

626. Minerals, crude or not advanced in value or condition by refining or grinding, or by other process of manufacture, not specially provided for in this section.

628. Miners' rescue appliances designed for emergency use in mines where artificial breathing is necessary in the presence of poisonous gases to aid in the saving of human life, and miners' safety lamps.

629. Models of inventions and of other improvements in the arts, to be used exclusively as models and incapable of any other use.

633. Needles, hand sewing and darning.

643. Ores of gold, silver, or nickel, and nickel matte; sweepings of gold and silver.

647. Pearl, mother of, and shells, not sawed, cut, polished, or otherwise manufactured, or advanced in value from the natural state.

649. Pewter and britannia metal, old, and fit only to be remanufactured.

650. Philosophical and scientific apparatus, utensils, instruments, and preparations, including bottles and boxes containing the same, specially imported in good faith for the use and by order of any society or institution incorporated or established solely for religious, philosophical, educational, scientific, or literary purposes, or for the encouragement of the fine arts, or for the use and by order of any college, academy, school, or seminary of learning, in the United States, or any State or public library, and not for sale, subject to such regulations as the Secretary of the Treasury shall prescribe.

653. Platinum, unmanufactured or in ingots, bars, plates, sheets, wire, sponge, or scrap, and vases, retorts, and other apparatus, vessels, and parts thereof, composed of platinum, for chemical uses.

654. Plumbago.

659. Radium.

670. Shotgun barrels, in single tubes, forged, rough bored.

678. Specimens of natural history, botany, and mineralogy, when imported for scientific public collections, and not for sale.

690. Tar and pitch of wood.

695. Tin ore, cassiterite or black oxide of tin, and tin in bars, blocks, pigs, or grain or granulated: Provided, That there shall be imposed and paid upon cassiterite, or black oxide of tin, and upon bar, block, pig tin and grain or granulated, a duty of 4 cents per pound when it is made to appear to the satisfaction of the President of the United States that the mines of the United States are producing 1500 tons of cassiterite and bar, block, and pig tin per year. The President shall make known this fact by proclamation and thereafter said duty shall go into effect.

702. Types, old, and fit only to be remanufactured.

703. Uranium, oxide and salts of.

706. Verdigris, or subacetate of copper.

711. Witherite.

718. Zaffer.

#### Schedule N.

425 Trousers buckles and waistcoat buckles, made wholly or partly of iron or steel, or parts thereof, valued at not more than fifteen cents per hundred, five cents per hundred; valued at more than fifteen cents per hundred and not more than fifty cents per hundred, ten cents per hundred; valued at more than fifty cents per hundred, fifteen cents per hundred; and in addition thereto on each and all of the above buckles or parts of buckles, fifteen per centum ad valorem.

428. Coal, bituminous and shale, forty-five cents per ton of twenty-eight bushels, eighty pounds to the bushel; coal slack or culm, such as will pass through a half-inch screen, fifteen cents per ton of twenty-eight bushels, eighty pounds to the bushel: Provided, That the rate of fifteen cents per ton herein designated for "coal slack or culm" shall be held to apply to importations of coal slack or culm produced and screened in the ordinary way, as such, and so shipped from the mine; coke, twenty per centum ad valorem; compositions used for fuel in which coal or coal dust is the component material of chief value, whether in briquettes or other form, twenty per centum ad valorem: Provided further, That on all coal imported into the United States, which is afterward used for fuel on board vessels propelled by steam and engaged in trade with foreign countries, or in trade between the Atlantic and Pacific ports of the United States and which are registered under the laws of the United States, a drawback shall be allowed equal to the duty imposed by law upon such coal, and shall be paid under such regulations as the Secretary of the Treasury shall prescribe.

432. Emery grains, and emery, manufactured, ground, pulverized, or refined, one cent per pound; emery wheels, emery files, and manufactures of which emery or corundum is the component material of chief value, twenty-five per centum ad valorem; crude artificial abrasives, ten per centum ad valorem.

437. Percussion caps, cartridges, and cartridge shells empty, thirty per centum ad valorem; blasting caps, two dollars and

twenty-five cents per thousand; mining, blasting, or safety fuses of all kinds, not composed in chief value of cotton, thirty-five per centum ad valorem.

434. Fulminates, fulminating powders, and like articles suitable for miners' use, twenty per centum ad valorem; all other not specially provided for in this section, thirty per centum ad valorem.

435. Gunpowder, and all explosive substances used for mining, blasting, artillery, or sporting purposes, when valued at twenty cents or less per pound, two cents per pound; valued above twenty cents per pound, four cents per pound.

476. Plows, tooth and disk harrows, harvesters, reapers, agricultural drills and planters, mowers, horse-rakes, cultivators, threshing machines, and cotton gins, fifteen per centum ad valorem: Provided, That any of the foregoing, when imported from any country, dependency, province, or colony which imposes no tax or duty on like articles imported from the United States, shall be imported free of duty.

#### Machinery for Repair and Vessel Material.

Sec. 18.—That machinery for repair may be imported into the United States without payment of duty, under bond, to be given in double the appraised value thereof, to be withdrawn and exported after said machinery shall have been repaired; and the Secretary of the Treasury is authorized and directed to prescribe such rules and regulations as may be necessary to protect the revenue against fraud and secure the identity and character of all such importations when again withdrawn and exported, restricting and limiting the export and withdrawal to the same port of entry where imported, and also limiting all bonds to a period of time of not more than six months from the date of the importation.

Sec. 19. That all materials of foreign production which may be necessary for the construction of vessels built in the United States for foreign account and ownership, or for the purpose of being employed in the foreign trade, including the trade between the Atlantic and Pacific ports of the United States, and all such materials necessary for the building of their machinery, and all articles necessary for their outfit and equipment, may be imported in bond under such regulations as the Secretary of the Treasury may prescribe; and upon proof that such materials have been used for such purposes no duties shall be paid thereon. But vessels receiving the benefit of this section shall not be allowed to engage in the coastwise trade of the United States more than six months in any one year except upon the payment to the United States of the duties of which a rebate is herein allowed: Provided, That vessels built in the United States for foreign account and ownership shall not be allowed to engage in the coastwise trade of the United States.

Sec. 20. That all articles of foreign production needed for the repair of American vessels engaged in foreign trade, including the trade between the Atlantic and Pacific ports of the United States, may be withdrawn from bonded warehouses free of duty, under such regulations as the Secretary of the Treasury may prescribe.

#### The Drawback Regulations.

Sec. 25. That where imported materials on which duties have been paid are used in the manufacture of articles manufactured or produced in the United States, there shall be allowed on the exportation of such articles a drawback equal in amount to the duties paid on the materials used, less one per centum of such duties: Provided, That when the articles exported are made in part from domestic materials the imported materials, or the parts of the articles made from such materials, shall so appear in the completed articles that the quantity or measure thereof may be ascertained: And provided further, That the drawback on any article allowed under existing law shall be continued at the rate herein provided. That the imported materials used in the manufacture or production of articles entitled to drawback of customs duties when exported shall, in all cases where drawback of duties paid on such materials is claimed, be identified, the quantity of such materials used and the amount of duties paid thereon shall be ascertained, the facts of the manufacture or production of such articles in the United States and their exportation therefrom shall be determined, and the drawback due thereon shall be paid to the manufacturer, producer or exporter, to the agent of either or to the person to whom such manufacturer, producer, exporter, or agent, shall in writing order such drawback paid, under such regulations as the Secretary of the Treasury shall prescribe. That on the exportation of medicinal or toilet preparations (including perfumery) hereafter manufactured or produced in the United States in part from domestic alcohol on which an internal-revenue tax has been paid, there shall be allowed a drawback equal in amount to the tax found to have been paid on the alcohol so used: Provided, That no other than domestic tax-paid alcohol shall have been used in the manufacture or production of such preparations. Such drawback shall be determined and paid under such rules and regulations, and upon the filing of such notices, bonds, bills of lading, and other evidence of payment of tax and exportation, as the Secretary of the Treasury shall prescribe.

Sec. 26. That upon the reimportation of articles once exported, of the growth, product, or manufacture of the United States, upon which no internal tax has been assessed or paid, or upon which such tax has been paid and refunded by allowance or drawback, there shall be levied, collected, and paid a duty equal to the tax imposed by the internal-revenue laws upon such articles, except articles manufactured in bonded warehouses and exported pursuant to law, which shall be subject to the same



rate of duty as if originally imported, but proof of the identity of such articles shall be made under general regulations to be prescribed by the Secretary of the Treasury.

#### Chronology of the Payne Tariff Law.

March 4, 1909—President Taft called an extraordinary session of Congress to revise the tariff.

March 15—Congress convened.

March 18—Chairman Payne of the House Ways and Means Committee introduced the bill.

April 10—The House passed the bill and transmitted it to the Senate.

April 12—The Senate began consideration of the measure.

July 8—The Senate passed the bill with 847 amendments.

July 9—The tariff question shifted from both houses of Congress and the bill sent to the Conference Committee.

July 29—The Conferees reach an agreement, which is signed and reported to the House.

July 31—The House adopted the conference report and passed the bill.

August 5—Senate adopted conference report and passed the bill.

August 5—President Taft signed the bill.

August 6, 1909—The new tariff law becomes effective, with the exception of certain specific provisions.

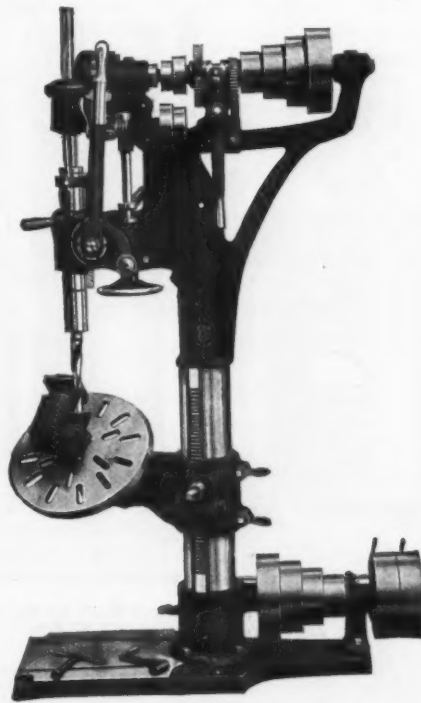
**The Crosby Company.**—The Crosby Company, Buffalo, N. Y., has considerably expanded its business in sheet metal stamping during the past year. New buildings have increased the floor space from 45,000 to 132,000 sq. ft. and the number of employees has grown from 250 to 450. A great deal of heavy special machinery has been added, so that the power requirements, drawn principally from the Niagara Falls current, have risen from 200 to 600 hp. While the automobile trade is largely responsible for this expansion, the Crosby Company is doing a larger business in parts for bicycles, lawn mowers, cream separators, telephones and other lines requiring sheet metal pieces.

**A Chinese Contract for an American Telephone System.**—The Western Electric Company, Chicago, has been notified by its Chinese agent, the Armhold-Karberg Company of Tientsien, of the award by the Chinese Government of a contract for the installation of a modern American telephone system in Peking in competition with the bids of English, German, French and other manufacturers. The award is the result of the investigations by a commission composed of three Chinese Government officials who visited Europe and America about two years ago, examining the various telephone systems. The contract specifies that the equipment must be delivered complete by February 3, 1910. The installation will be under the supervision of American engineers who will remain in Peking until the Chinese operators have mastered the work. The two switchboards that will first be installed in Peking, one at each end of the city, will cost approximately \$150,000. This is simply expected to be the beginning of a great business in China in the installation of modern telephone systems in Chinese cities.

**Low Shipbuilding Costs in Great Britain.**—The London *Statist* of July 31, commenting editorially on the condition of the shipbuilding industry in Great Britain, says: "Shipbuilders can now build more cheaply than ever they could before, not because labor is cheaper, for shipyard labor is still relatively dearer than probably all other manual labor, but because of improved methods of construction. Such authorities as H. E. Moss & Co. state that steamers of from 6000 to 8000 tons can now be built at £5 5s. per ton of their deadweight carrying capacity. If this is so, then the cost price is lower than we ever remember it to have been, save one short period some years ago, when a few steamers were built (though probably without profit to the builders) at £5 per ton deadweight." Reduced to its equivalent in United States money, the price of £5 5s. above stated means that 6000 to 8000 ton steamships can now be built for \$153,000 to \$204,000.

### The Robertson Tilting Drill Table.

The tilting table is the new feature of the drill illustrated, which is the standard 21-in. stationary drill built by the Robertson Drill & Tool Company, Buffalo, N. Y., and described in *The Iron Age* April 22, 1909. Whereas with the ordinary drill table it would be neces-



A 21-in. Drill with Tilting Table, Built by the Robertson Drill & Tool Company, Buffalo, N. Y.

sary to reset the work each time a hole is to be drilled at a different angle, with the new table once setting of the work is sufficient to drill all of the holes in one piece, unless it should chance holes had to be drilled in the side which was originally placed in contact with the table. The table can be turned to any angle from a vertical to a horizontal position and is adjusted through a worm and worm wheel, so that the positioning can be done accurately and quickly. In the illustration a piece is shown on the table which has holes to be drilled and reamed at several different angles and by revolving and tilting the table all of these holes can be presented in proper relation to the spindle.

**Improvements at the Lorain Works.**—The National Tube Company, Pittsburgh, is installing at its Lorain Works, Lorain, Ohio, two additional butt welding furnaces to make pipe from 1/4-in. up to 1-in. inside diameter, both sizes inclusive, and is putting in a motor-driven continuous skelp mill to supply these furnaces and supplement the skelp mill capacity at that plant. Plans also contemplate the addition of three 1200 kw. low pressure turbo-generators to furnish electric power to drive the skelp mill. The total expenditures for these various installations will require about \$1,200,000. There are no important improvements or extensions contemplated at any of the other works of the National Tube Company at present.

In addition to the 8000 cars ordered by the Pennsylvania Railroad last week, the *Railroad Age-Gazette* reports the following business placed and pending: The Chicago & Northwestern ordered 1500 steel underframe gondola cars from the Pullman Company; the Northern Pacific an increase of 1000 on its original order of 1000, the Pullman Company getting 800 more and the Seattle Car Company 200; the Burlington, 500 steel gondola cars from the Pressed Steel Car Company. The box car order of the Burlington was for 3000 cars instead of 2000, as reported. The same road is in the market for 500 flat cars and will buy 500 to 1000 stock cars.

## The Thompson Suction Gas Producer.

In the design of the suction gas producer, Fig. 1, which is a late product of the J. Thompson & Sons Mfg. Company, Beloit, Wis., the aim has been to insure continuous operation, eliminate grates and avoid dust from

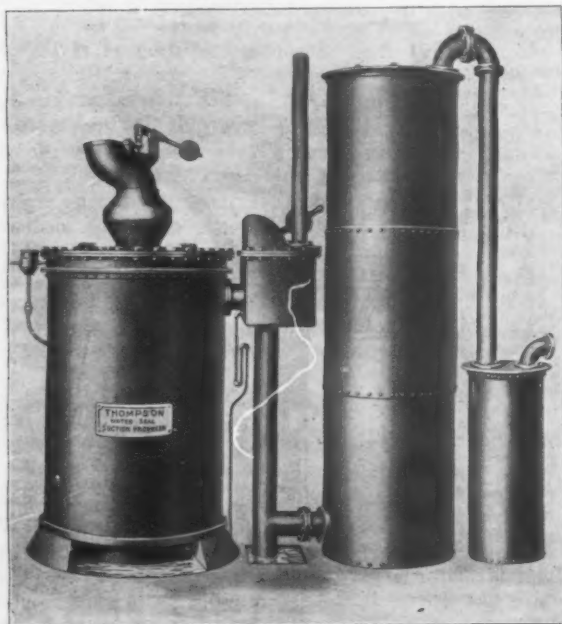


Fig. 1.—The New Suction Gas Producer Built by the J. Thompson & Sons Mfg. Company, Beloit, Wis.

tween the three or more legs or piers on which the producer is supported afford openings for the removal of ashes with an ordinary shovel. Being removed through the water the ashes are wet and no dust, therefore, arises from this operation. The absence of grates simplifies continuous operation, since there is nothing to obstruct the downward movement of the ashes, which are removed in the manner described without in any way interfering with the gas producing process.

In the top of the generator, which consists of a steel shell lined with a double row of fire brick and reinforced at top and bottom with angle rings, is located a cast iron evaporator in which is generated the supply of steam introduced with the air through the tuyeres. The latter are arranged to give uniform and even distribution through the fire bed. Fuel is charged into the producer through a top charging hopper arranged with a dumping valve at the bottom, and a cover over the mouth of the opening. As the gas is generated in the producer it is conducted through a pipe leading to the wet scrubber. Located in this pipe line between the two is a vent valve by means of which the passage from the scrubber may be closed, and that to the vent pipe opened; thus when the valve is in its upper position the passage through from the generator to the wet scrubber is unobstructed, but when dropped to its lower position this passage is closed and that to the vent pipe is opened.

The wet scrubber through which the gas is passed for cleansing consists of a cylindrical sheet steel vessel

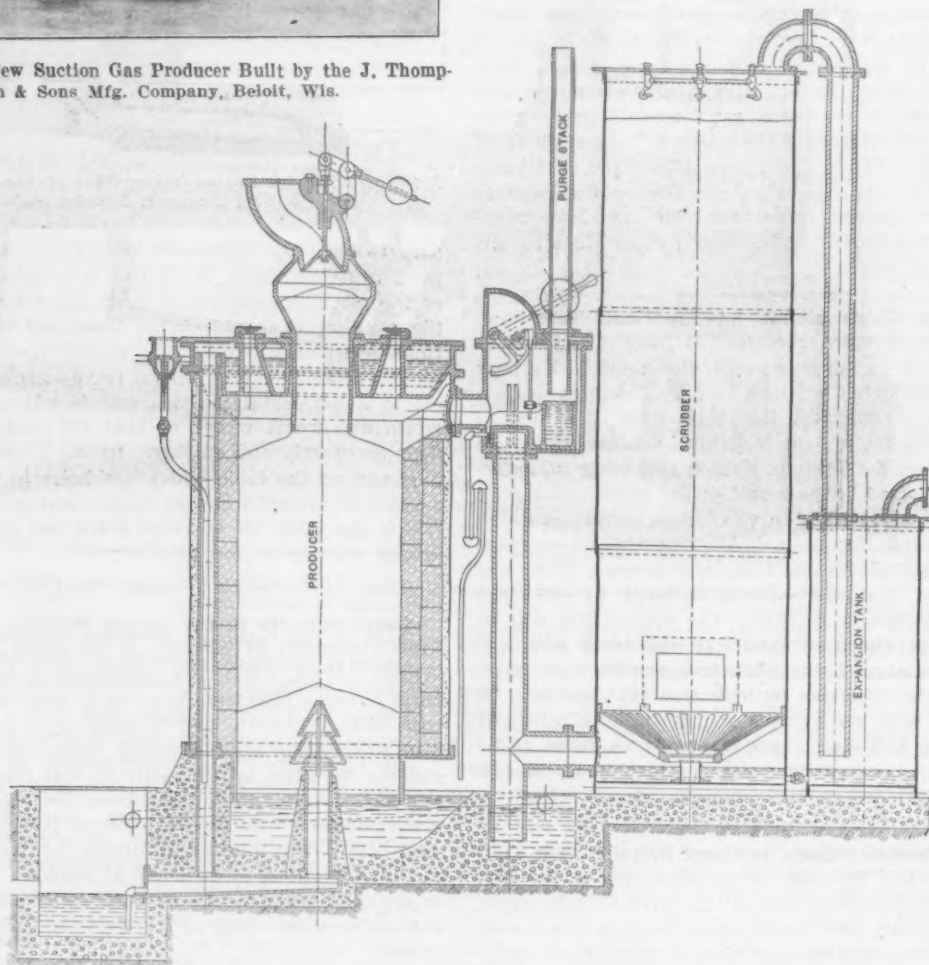


Fig. 2.—Sectional View of the Thompson Suction Gas Producer and Auxiliaries.

dry ashes. The construction is best shown in the sectional view, Fig. 2. A flanged ring attached to the bottom of the generator projects into a water filled pit over which the producer is placed making an airtight bottom. A bed of ashes resting on the bottom of the pit and extending above the water line supports the fuel. Air and steam admitted through a central set of tuyeres penetrate the layer of ashes and pass upward into the fuel furnishing in a regulated measure the amount of oxygen required for combustion. Spaces be-

provided with a grate near the bottom, upon which rests the bed of coke with which the scrubber is filled. Water is sprayed over this bed of coke through sprinklers placed at the top of the scrubber. Gas from the generator entering the scrubber at the bottom passes up through the wet coke which separates the impurities from it. An airtight cleaning door at the bottom of this vessel provides means for cleaning the interior and removing the coke. Moisture gathered by the gas in its travel through the wet coke is drained off in a small drying tank, to

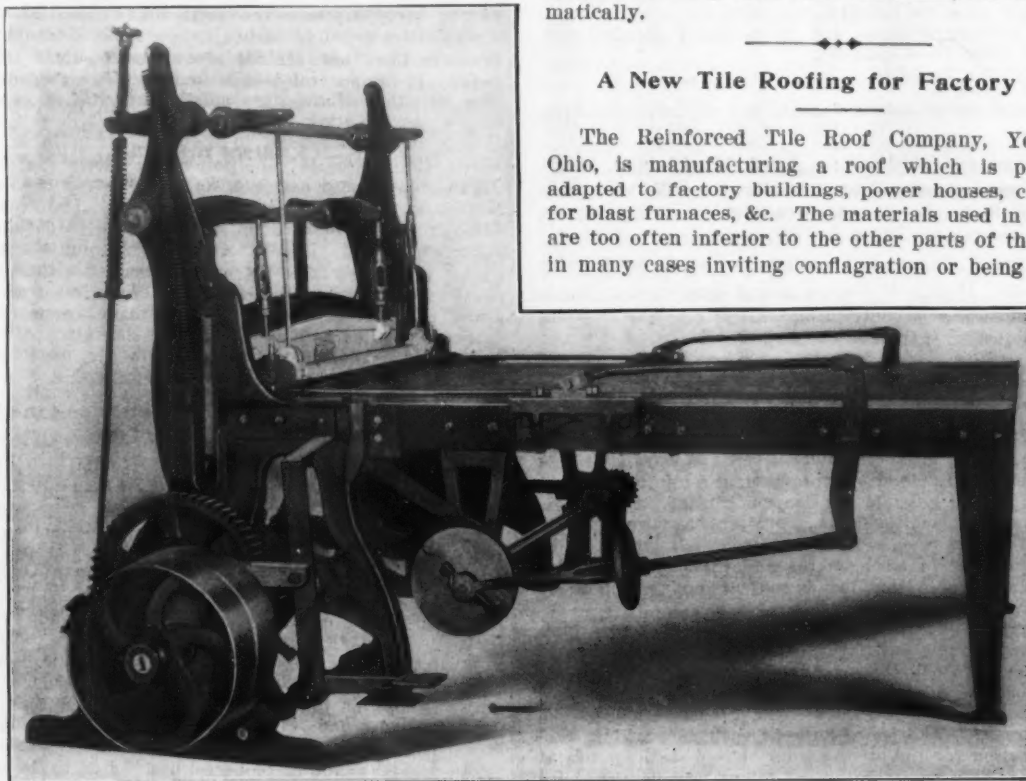


which it is piped from the wet scrubber; the drying tank also serves to equalize the suction of the engine on the producer.

The auxiliary equipment furnished with this producer includes a portable blower equipped with pulleys for driving with a small engine or motor, or if desired by hand. Working under standard conditions at full load, using anthracite pea coal, coke or charcoal, the producer is claimed to deliver 75 per cent. of the heating value of the fuel consumed, gasifying up to 13 lb. of fuel per square foot of grate per hour. The producer is built in sizes from 30 to 300 hp. capacity.

#### A Bertsch Sheet Shear with Automatic Feed.

A shear for automatically cutting sheets into strips of uniform width is a new product of Bertsch & Co., Cambridge City, Ind. The illustration shows the shear and the automatic feeding mechanism for advancing the sheet to the blades. The latter can be adjusted so that



A Sheet Shear with Automatic Feeding Mechanism Built by Bertsch & Co., Cambridge City, Ind.

strips of any width between 1-16 and 12 in. can be cut, and is claimed to be accurate and positive.

The feeding is done by a reciprocating clamp, which consists of a pair of plates or jaws cramping the sheet from above and below, and travels in guides. As the clamp is moved toward the shear the jaws are closed, and as it is moved away the jaws are opened ready to take a new grip on the sheet. The opening and closing of the jaws is done by lifting and depressing the upper jaw through connecting rods from a rock shaft on the upper part of the shear frame, which is oscillated through another connecting rod by an eccentric on the main shaft. The last mentioned connecting rod carries compression springs and sliding stops, so that its thrusts and pulls are yielding to allow for the movement of the clamp from and toward the blades and for different thicknesses of sheets.

The reciprocating motion of the clamp is effected through the horizontal guided rods at the sides of the table top and rods connecting their cross heads to levers actuated by a second eccentric on an auxiliary shaft suspended under the table. The latter has an adjustable throw to give different lengths of feeding movement, and the rod from this eccentric is variable in length through a screw and hand wheel to position the stroke of the clamp. The auxiliary shaft is driven through

bevel gears and an intermediate shaft from the main shaft.

This automatic feeding mechanism may be attached to any of the builders' standard sheet shears. The shear shown has its knife driven through adjustable connecting rods from a rock shaft oscillated by a connecting rod to an eccentric on the main shaft, and the weight of the blade is counterbalanced by tension springs at the sides of the frame. Stopping and starting of all operations is controlled by a foot lever operating a clutch on the driving pulley shaft. When the shear is started simultaneously with the up-stroke of the knife, the clamp, closed and gripping the sheet, moves the sheet toward the blades. A hold-down descends ahead of the knife and holds the sheet in place during the shearing. While the shearing is being done the clamp opens and moves away from the blades, ready to grip and feed the sheet for the next cut.

Either a single sheet of any width up to the length of the blades, or several narrower sheets, placed side by side, and of no greater combined width, can be fed automatically.

#### A New Tile Roofing for Factory Use.

The Reinforced Tile Roof Company, Youngstown, Ohio, is manufacturing a roof which is particularly adapted to factory buildings, power houses, cast houses for blast furnaces, &c. The materials used in such roofs are too often inferior to the other parts of the building, in many cases inviting conflagration or being subject to

more or less rapid deterioration through corrosion. The materials entering into the product of the Reinforced Tile Roof Company are Portland cement and specially prepared silica sands, reinforced with a steel fabric. The special process of manufacture renders the tile impervious to water. The standard size of tile manufactured by the company is 26 x 52 in., each tile covering an area of 8 sq. ft. and providing for laps. These are made by interlocking raised portions, which provide for contraction and expansion without opening the joints.

While the architecture of manufacturing plants is frequently neglected, the tile roof lends character to the buildings, the bright red surface presenting a pleasing appearance. Roofs of this character require no painting, and their fireproof and lasting qualities should recommend them for a variety of industrial buildings. The company contracts to erect these roofs complete on steel frame buildings in any part of the country. It will market the product through its home office at Youngstown, Ohio, and branches in New York, Chicago and Cleveland.

The National Malleable Castings Company, which has just completed the rebuilding of a portion of its plant at Cleveland, Ohio, will reconstruct another section and has let a contract for a brick building of steel construction, 100 x 276 ft.



## Tool Steel Specifications for the United States Navy.

Through the courtesy of Naval Constructor Henry Williams of the Navy Department, Washington, D. C., we are enabled to present copies of reports submitted by the Board on Tool Steel under date of July 27, 1908, and January 29, 1909, with the specifications for high speed tool steel which have been adopted in accordance with the recommendations of the board contained in the first report. The board was constituted under the direction of Acting Secretary of the Navy Truman H. Newberry, who issued a memorandum dated March 2, 1908, addressed to the Chief of Bureau of Steam Engineering, in part as follows:

In order to diminish varieties of qualities, shapes, sizes and proprietary brands of tool steel now in use by the various bureaus of the department, a board will be convened on March 4 consisting of representatives from your bureau and the bureaus of Equipment, Ordnance and Construction and Repair to consider this matter and report to the department at the earliest practical date upon the following four facts:

1. The qualities desirable and the necessary chemical composition to obtain these qualities.
2. The shapes desirable.
3. Sizes desirable.
4. The different proprietary brands and the reasons therefor in each case.

The board met at the Navy Yard, Washington, D. C., March 4, being composed of the following: W. M. Parks, captain, U. S. N., Bureau of Steam Engineering; G. W. Denfeld, commander, U. S. N., retired, Bureau of Equipment; Hilary P. Jones, Jr., commander, U. S. N., Bureau of Ordnance; Henry Williams, naval constructor, U. S. N., Bureau of Construction and Repair. The reports are as follows:

### PRELIMINARY REPORT OF BOARD ON TOOL STEEL.

NAVY DEPARTMENT,  
Washington, July 27, 1908.

Meetings of the board have been held as often as the other duties of the members would permit. Visits have been made to navy yards and manufacturing establishments in order to obtain all possible information bearing on the question of steel for small cutting tools for navy yard work. Expert advice has been sought from men well known to be masters in the art of steel making and experimenting; also from the makers of well-known brands of tool steel, both by letters and by personal interviews.

For many reasons the board finds that it is a very difficult matter to frame entirely satisfactory specifications for the purchase of tool steel. After considerable work the board has finally made a specification for high speed steel which is submitted herewith for the consideration of the various bureaus. The board will, as soon as possible, submit specification for the other grades of tool steel for use at navy yards. This report is presented now because the board believes that the general principle of forming cutting tools for all shops to certain standard forms is of more importance than the selection of the grade of tool steel to be used. It is this general principle that the board believes should be presented to the various bureaus for their consideration, and, therefore, this preliminary report is presented, although accompanied by but one specification for tool steel.

Taking in order the four facts named in the department's memorandum, the board reports upon:

#### 1. The Qualities Desirable in Tool Steel and the Necessary Chemical Composition to Obtain These Qualities.

First in importance of the desirable qualities that tool steel should have is that it shall be of uniform quality throughout for each and every grade. Another important quality in tool steel is that it shall be of such a chemical composition that it is not likely to fire crack. The chemical composition of the steel should be such as to render it as little liable as possible to be ruined through carelessness in forging the tool or in its subsequent grinding. The chemical composition should be such that the tool will be as strong as practicable in the body. The chemical composition should be such that the steel can be forged through a comparatively wide range of temperature; and, finally, the steel should be free from all seams, cracks and other surface imperfections. The above named qualities refer to high speed steel, and are essential in greater or less degree to all grades of tool steel. The chemical composition of the board's specification is such that it is believed the desirable qualities will be obtained in as great a measure as possible.

#### 2. The Shapes Desirable.

The board sees no reason to restrict the number of shapes of the bars of tool steel that may be asked for on

requisition. These shapes are square, round, octagon, hexagon and flat, and a few other shapes needed for power tools of a particular design. The above shapes are all made commercially, and no extra cost is involved in their use. The board, however, believes that the word "shapes" in the precept refers to the shape of the tools, and especially to the shape of the cutting end of small tools, and here we find a great variety of shapes for the cutting edges of tools used in various navy yard shops.

The board is impressed with the need of standardization of shapes of cutting edges for all small tools used in navy yard shops. This can best be done, in the opinion of the board, by establishing for a navy yard a central tool dressing and tool grinding shop where all tools for all shops of that yard may be forged and ground to certain well-known standard shapes that experience has proved to be the best for the purpose. The board recommends that this scheme be tried at the navy yard, League Island, in a manner that will be more fully explained later in this report. If extension of this scheme is found to be desirable, such extension may be had by equipping each yard with its own central tool dressing and tool grinding plant; or it may be desirable in some cases to have one central plant furnish tools for several yards. If the general idea is found to be a good one, extension on either of the lines noted above will be a subject of future consideration.

#### 3. Sizes Desirable.

This is largely governed by the sizes of the tool posts or tool holders of the power tools in use. The great variety of power tools found in the various navy yard shops causes a correspondingly large variety of sizes for the tool steel used. The board is of the opinion that care in making out requisitions will greatly reduce the number of sizes to be asked for, but as these sizes are made commercially, no extra cost is involved by their use. Variation of less than  $\frac{1}{8}$  in. in any dimension of a bar, however, does not appear to be necessary and should not be permitted.

#### 4. The Different Proprietary Brands and the Reasons Therefor in Each Case.

The demand for any proprietary brand of tool steel is based upon experience had with that brand by the user or users of it, whether in navy yards or in outside shops. Hence the variety of brands asked for is almost as great as the number of large users of tool steel; and this is especially noticeable in the navy where each shop of each navy yard has its own idea as to the brands of steel best suited for its use, and naturally asks for that brand. If all the tools for one navy yard were to be forged at a central plant, those in charge of that plant would soon settle upon one or two brands of tool steel as best suited for general use, and all the shops of that particular yard would soon come to use the same brand. This is what practically obtains in the large shops of the country. Each shop determines by trial the particular brand of tool steel best suited to its needs, and that brand is bought regardless of price and without competition until such time as another brand may be able to demonstrate its superiority.

Under the above named plan it is probable that there would be a different brand of tool steel used at each navy yard, and therefore it seems to the board to be desirable to buy all the tool steel for the navy for a certain definite period, say, one year, at one place, and to buy this tool steel from manufacturers only and in accordance with definite specifications and not by brand name. This would give all the yards the same tool steel and in connection with a central tool dressing and tool grinding plant, using standard forms and grinders, there would result uniformity, not only in the quality of the steel, but in the shape of the tools made from that steel. Standard grades of steel and standard shapes of tools for all shops would take the place of mixed grades and many shapes. The adoption of this plan of buying tool steel for the navy by means of specifications will require, first of all, the installation of a testing outfit at the navy yard where the buying is to be done, designed to show whether or not a steel presented by a contractor is of the quality demanded by the specifications. The board has endeavored to frame specifications by means of which standard grades of tool steel may be bought. But before these specifications can be used, there must be installed the special apparatus for conducting the tests required by the specifications.

The board is aware that these tests will be both tedious and expensive to make, but such tests will be absolutely necessary unless the present haphazard method of buying the tool steel is to continue. Further, the cost of the steel bought by these proposed specifications will be considerably higher than is now paid and this is because the steel will be of a better quality than that now bought and used. Whether the net result from the use of a better quality of

tool steel will be a reduction in the cost of operating the shops of any navy yard will depend upon whether the shop system and management used and the shop equipment of that yard are all properly adapted to get full advantage from the better quality of tool steel. It is evident that the question of tool steel is intimately connected with the larger question of shop system and management, which question can only be touched upon here. The board believes that the selection of the best quality of steel for cutting tools is but one step in the larger development of our navy yard shops that will result in increased output at decreased cost. Time, however, will be required to show whether the higher-priced tool steel is to be cheaper in the long run.

#### Should be First Tried at One Yard.

The board is of the opinion that the purchase of tool steel by specifications should first be tried at one navy yard, and if successful there, tool steel for all yards for one year's time may be bought at that yard and distributed to the various yards as required. The board believes that the navy yard, League Island, the same yard recommended for the trial of the central tool-dressing plant, will be the best yard at which to make this experiment. The Board, therefore, recommends that the necessary apparatus for properly buying large quantities of steel by means of specifications and for making and grinding tools of standard shapes be installed at the League Island Navy Yard. The board couples the inspecting of steel with the making of the tools from that steel. If the tool steel is to be bought in quantity by specifications, as proposed, it will be absolutely necessary for the success of the scheme to forge and grind the tools to be made from this steel, for all the shops of the yard, at a central plant in that yard. The testing apparatus will be available for buying tool steel for all the navy yards. Whether each navy yard shall have its separate tool-grinding plant or several yards be supplied from one yard is a question to be decided after the success of the scheme shall have been proved. The change from the old steel and old forms of cutting tools for the experimental navy yard may be made gradually. It would be better, except for the expense, to make this change just as soon as the necessary tools of the new patterns are ready.

The present small tools of more than one shape and of many grades of steel should be retired and their places taken by the standard tools. All standard tools should be marked according to some well-defined system, so as to be readily identified. By making all the tools for all the shops of the navy yard at a central plant it will be possible to insure a uniformity in the tools for the various shops that could not be had under the present system where each shop maintains its own tool-dressing and tool-grinding plant. It will also make it easier to draw a just comparison as to the cost between the present methods and the proposed new one. At the end of a year, after all the old tools have been retired, it should be possible to decide as to the relative cost of this proposed system of buying tool steel by specifications, with the necessary adjunct of a central tool-grinding and tool-dressing plant, as compared with the present system. A few special tools will, of course, have to be made in each shop, but their number will not be large.

#### Testing Plant at the League Island Yard.

The proposed central plant for the League Island Yard will be for the purpose of testing the tool steel as it is delivered by the contractor; that is, for making the tests required by the specifications, and until this testing apparatus is ready the specifications cannot be used. The central plant will also be for forging tools for all the shops of the yard and giving them the proper heat treatment, and grinding them to standard forms. After issue of the tools to different shops, they may be reground as required in the tool rooms of those shops, or returned to the central plant for every regrinding. The latter plan is preferable since the central plant at League Island will alone be equipped with standard grinders. All tools, however, should be returned to the central plant for redressing when that becomes necessary. One forge and one small grinder might be retained in each one of the present tool-dressing plants for the purpose of dressing and grinding center punches and other small special tools used in the different shops, but no standard tools should be ground except at the central plant.

The board visited the League Island Navy Yard, and after some search decided upon an annex to Building 25, as the best location for a central tool-dressing and tool-grinding plant, and also the place for the apparatus to be used in trying out the steel presented by contractors. The selection of this site was approved by the commandant.

The board recommends that this annex be put in condition to receive the apparatus necessary for testing tool steel and for forging and dressing the tools for all the shops of the yard. For the purposes of one navy yard the necessary apparatus will not be extensive, but in the building selected there is room for an extension of apparatus to test a year's supply of steel for several navy yards if that is found to be desirable. Space is also available for the easy extension of the tool-dressing and tool-grinding department. Modern power tools are in adjacent shops where cutting

tests required by the specifications may be made. The board found that no gas is available at League Island for use in the heating furnaces of the proposed testing plant. For this purpose oil is not suitable, because so far as the board can find out a suitable burner to maintain the uniform temperature so necessary for the testing furnaces has not yet been developed. The board understands that the city gas mains now reach a point close to the yard, and it is probable that the gas company will extend the supply of gas to the yard upon request.

The board finds that a contract may be made with the Tabor Mfg. Company, Philadelphia, to install the necessary furnaces for the testing plant and the grinding machine with the requisite formers to give the tools the standard shapes desired. The Tabor Mfg. Company will also contract to furnish the services of an expert to put in the apparatus, and to instruct the yard personnel how to conduct the various tests required by the specifications. The forges and necessary workmen required at the plant can be supplied from the tool-dressing room of some department of the navy yard, since the equipment of those separate tool-dressing rooms will be reduced to that found necessary for certain small special tools.

To sum up, the board finds, first, that it is well worth while to make the experiment at one navy yard of a central tool-grinding and tool-dressing plant, designed to make cutting tools for all the shops of that yard. If successful, then the extension of the scheme to all navy yards, either by enlarging the established central plant or by duplicating the same at each yard.

That it is most desirable to have uniform standard qualities of tool steel for all navy yards.

This uniformity can best be had by buying all tool steel for the navy subject to specifications, the lowest responsible bidder to deliver the steel at a designated yard where will be established the testing plant, and there will be made, by the yard experts, the tests required by the specifications. The steel can then be distributed to the yards as required, if each yard is to have a tool-dressing and tool-grinding plant; or all made into tools at one yard and the tools distributed, if the alternative scheme of a central plant for all yards is adopted. The steel to be bought in large quantities, say, enough for one year.

The board is also of the opinion that, in case the above method of purchase of tool steel does not meet with the Department's approval, uniformity of tool steel may also be had by carrying out at stated times, say, once a year, competitive tests of well-known brands of tool steel, and awarding contract for the year's supply to the brand found to be most successful under all conditions of the test. These tests to be under the direction of the Government experts. This scheme might mean a yearly change of brand of tool steel with the attendant disadvantage of difference in working from the brand used the year before. The board recognizes the fact that specifications for tool steel will have to be modified or entirely changed about once in four or five years to keep pace with improvements that may be made in the methods of manufacture of the steel.

The specifications above referred to are as follows:

#### SPECIFICATIONS FOR HIGH SPEED TOOL STEEL.

The steel shall be made by the crucible process, and shall be of uniform quality throughout, and shall be delivered in bars of commercial length, no short bars to be received, and shall be delivered annealed unless otherwise specified. The bars shall be free from all seams, cracks and other mechanical defects.

The steel shall be delivered and inspected in lots of not more than 5000 lb., unless otherwise specified, each lot containing its proper proportion of the sizes called for on the requisition.

The inspection shall be made at the navy yard, League Island, Pa., and shall be under the direction of an officer detailed for that duty by the commandant of the yard.

Each bar, up to and including a sectional area of 2¼ sq. in., shall be delivered with a test piece on one end about one and one-half times the larger dimension of the bar in length, nicked one-quarter through from each side while bar was hot, so that the test piece may be easily broken off. Larger bars to have coupon test piece forged on one end and nicked as stated above. The test piece must be stamped to match the number of the bar, and when forged down as a coupon must be about 1 x 1½ in. and about 3 in. long.

The test piece from each bar will be broken off and subjected to a higher heat test in an approved furnace, kept at a definite uniform temperature, which shall be as high as practicable. The test piece, when broken off the end of the bar, should show the fine grain which is characteristic of this class of high speed tool steel when properly made.

#### High Heat Test.

The test piece shall be preheated slowly and thoroughly in a preheating furnace kept at a uniform temperature of about 1550 degrees F. When thoroughly heated the test piece shall be quickly transferred to the high heat furnace and rapidly heated to just below the melting point, then



promptly removed from the furnace and blown cold in a heavy blast of air.

Each test piece shall then have ground off one end by wet emery grinder an amount at least equal to one-half the thickness of the test piece, leaving the end after grinding a V-shape. This V-end shall then test "file hard." Each bar failing in this test shall be rejected and another bar furnished in its stead by the contractors, and failure of 10 per cent. of the bars of any lot to meet this test shall reject that lot.

Chemical analyses shall be taken and the steel of each lot shall show the following maximum and minimum limits for the elements named:

	Not less than. Per cent.	Not more than. Per cent.
Tungsten .....	18.50	19.50
Chromium .....	5.25	6.00
Vanadium .....	0.10	0.35
Carbon .....	0.55	0.75
Manganese .....	.....	0.15
Silicon .....	.....	0.110
Phosphorus .....	.....	0.020
Sulphur .....	.....	0.020

There shall be no other impurities or ingredients, except iron, particularly no molybdenum.

From each lot of tool steel one or more tools shall be forged and treated with the standard high heat treatment and ground to a uniform standard shape of cutting edge for lathe tools; these tools shall be given a standard 20-min. test on a steel forging of the following chemical and physical characteristics—viz., to be open hearth, either nickel or carbon steel, annealed:

Minimum tensile strength, 80,000 lb.  
Minimum elastic limit, 50,000 lb.  
Minimum elongation in 2 in. (cold bend about an inner diameter of 1 in. through 180 degrees), 25 per cent.  
Maximum phosphorus, 0.06 per cent.  
Maximum sulphur, 0.04 per cent.

The lathe tool, known as the standard  $\frac{3}{8}$ -in. tool, shall be able to take a cut of 3-16 in. depth, with 1-16 in. feed, at surface speed of 60 ft. per minute.

Following is the preliminary report of the Board on Tool Steel, supplementary to that dated July 27, the board being composed of the same officers with the exception of Captain Parks, whose place was taken by Commander F. C. Bowers, U. S. N., Bureau of Steam Engineering:

#### REPORT ON CARBON TOOL STEEL.

NAVY DEPARTMENT,  
Washington, January 29, 1909.

The board has been unable to obtain sufficient data and information on which to base detailed specifications for the several grades of carbon tool steel that will be necessary for different kinds of work. It has been collecting information and data, and, pending completion, this preliminary report is submitted for the purpose:

1. Of making recommendations as to the number of grades of carbon tool steel that shall be purchased for general use;
2. To recommend the standardizing of methods of treatment for carbon tool steel as was recommended for the high speed steel;
3. To indicate the lines along which the board is working so that the heads of various departments in navy yards may be informed, and in order that the board may receive information developed by them in the course of such work as they may do on those lines.

Taking in order the four acts named in the department's memorandum precept, the board reports upon:

#### 1. The Qualities Desirable in Tool Steel and the Necessary Chemical Composition to Obtain Those Qualities.

As stated in previous reports, the essential quality of all tool steel is uniformity in each and every grade. The chemical composition must be so specified for each grade as to insure such uniformity; it should be such as to render a tool as little liable to be ruined in forging, treating or grinding, and to permit of as wide range of temperature for forging as possible. It should be such as to insure that the best possible results will be obtained from the standard method of forging and treating, which should be adopted and used at all navy yards.

The board considers this point of the utmost importance, as if steels requiring different treatment are purchased there is no way by which the tool dresser can ascertain the treatment to give to a particular tool, unless he can identify the brand of steel of which it is made and the instructions for its treatment are at hand. This ordinarily will not be the case and the steel will be treated in accordance with usual custom, with results that will be generally far from satisfactory. In this connection the board deems it not improper to quote the opinion of F. W. Taylor, the leading authority on tool steel in this country, expressed in his book, "The Art of Cutting Metals":

The two operations of hardening and tempering implements made from tool steel are by no means simple. They have been the subject of a vast amount of experimenting and investigation for many years, and in themselves constitute whole trades.

The chief difficulties in hardening come from three causes:

(a) Each ordinary tool steel, depending upon its chemical composition, has a particular temperature at which a radical change takes place in the condition of the carbon which is contained in it. This temperature, known as the "refining point," "critical point," or "point of recalcense" of the steel, will be briefly referred to later in the paper. In order to obtain the best results in hardening, the steel should be uniformly heated to slightly above this critical point. If heated below the critical point it fails to harden when plunged into water. On the other hand, the higher the temperature to which it is heated above the critical point the coarser will be the grain, with increased weakness and brittleness after being plunged into water. This overheating of carbon steel tools to temperatures too high above the critical point has been in the past, perhaps, the most frequent cause of their failure. Hence the difficulty in judging the critical point for heating tools presents one of the most serious problems in hardening.

(b) The second difficulty lies in not heating the tools uniformly. A lack of uniformity in heating will produce irregularity in the degree to which the tool is hardened, some portions being much harder than others after quenching, and this sets up severe internal strains in the tool, frequently developing into water cracks.

(c) The third difficulty lies in properly cooling the tool in the water or quenching medium. Uneven or irregular cooling also produces severe internal strains, often resulting in water cracks.

The board considers the question of treating tool steel of the utmost importance, and the necessity is urgent for ascertaining and adopting for immediate use an exact method of treatment that will give the best and uniform results for each grade of tool steel used. Furthermore, the board believes that the great object to be attained in the successful treatment of tool steel is to get away from the old method of telling the degree of heat the tool has reached by the eye; it should be brought to as nearly a mechanical process as possible, which can be done by adopting the time element in the treatment. Furnaces should be used that will keep, so far as is practicable, a steady heat at the desired temperature, and be provided with a pyrometer for indicating the temperature attained.

The board has been unable to conduct experiments along this line, in the absence of facilities, but recommends that experiments be conducted at the various navy yards and especially at the experimental tool grinding and tool dressing plant at the Philadelphia yard, to determine the most efficient method of treatment of carbon tool steels of the various grades, as recommended to be adopted further in this report.

#### 2. The Shapes Desirable.

#### 3. The Sizes Desirable.

The board has no further comments to add to those included in its former report, beyond the statement that for the purposes for which carbon tool steels are used the number of sizes and shapes is diversified. Stock sizes and shapes should be limited strictly to those required for current demand, and no purchases should be made of sizes and shapes unless such are known to be regularly used. Where special sizes and shapes are required for a specific purpose, purchases should be limited to the amounts so needed and requisitions for tool steel should be scrutinized carefully with this in view.

#### 4. The Different Proprietary Brands and the Reasons Therefor in Each Case.

The board is of the opinion, as expressed in its previous report, that uniformity in quality and characteristics of the various grades of tool steel can be had best by buying all tool steel for the navy subject to specifications, the lowest responsible bidder to be awarded the contract subject to acceptance or rejection of the deliveries as they conform or fail to conform to the requirements of the specifications, and meet or fail to meet the prescribed tests. Furthermore, bidders should be required to agree to replace bars which may be found to be defective in use.

The board is further of the opinion that three grades of carbon tool steel will be sufficient for all general requirements at the navy yards. These grades should be designated A, B and C, respectively, and should be required to be crucible steel, having in general, the following characteristics:

Grade A for finishing steel, special machine cutting tools, and other purposes for which a high grade of tool steel is required, but for which high speed tool steel is not suitable. It is the board's opinion, however, that the use of the high speed steel may be extended economically for many of the purposes for which carbon steel now is used, thus reducing the amounts of Grade A steel required. Grade A steel should have a chemical composition approximately as follows:

Carbon, not less than 1.20 per cent.  
Silicon, not less than 0.30 per cent.  
Manganese, not less than 0.20 per cent.  
Phosphorus, not more than 0.02 per cent.  
Sulphur, not more than 0.02 per cent.  
Tungsten, not to exceed 3 per cent. if found to be desirable.

Grade B steel for taps, dies, milling cutters, drills, forming tools, special chisels, dies, punches, &c. This grade of steel should have a chemical composition approximately as follows:

Carbon, not less than 1.00 per cent.  
Silicon, not less than 0.20 per cent.  
Manganese, not less than 0.20 per cent.  
Phosphorus, not more than 0.025 per cent.  
Sulphur, not more than 0.025 per cent.



Grade C for purposes which would not justify the use of the higher grade and more expensive tool steels, also for tools subject to percussion, such as chisels for cold and hot work, blacksmith's tools. Also for rivet punches, dies, shear blades for structural steel work, hand bars, &c. This grade of tool steel should be comparatively low in carbon. Its composition would be approximately as follows:

Carbon, not more than 0.90 per cent.  
Silicon, not less than 0.15 per cent.  
Manganese, not less than 0.15 per cent.  
Phosphorus, not more than 0.028 per cent.  
Sulphur, not more than 0.030 per cent.  
Determination of carbon in all cases by the combustion method.

In addition to the chemical requirements mentioned for each of the above grades of steel, certain definite physical tests will be specified. These will have to be based on experience with tool steel purchased in the ordinary manner, but following, so far as possible, the above classifications.

The method of treatment to which each grade of steel must respond should be specified, but the details of such treatment can be determined only after experiments conducted in the manner indicated above.

The board has been unable to obtain data along the lines indicated, owing to the somewhat haphazard method now pursued in the purchase and treatment of tool steel, but it believes that, with information that can be obtained when the experimental tool steel plant at the navy yard, Philadelphia, is put into operation, that such methods of treatment may be determined upon that will permit the best results to be obtained from the various grades of tool steel in the same manner as was done in the case of the high speed steel.

Naval Constructor Williams states that several contracts have been awarded for high speed tool steel under the specifications as above adopted and the results have been generally satisfactory. He further says that while they cannot be regarded as being conclusive in establishing the correctness of the particular specifications, they do establish, without question, the desirability of purchasing tool steel on a specification of this character.

**The Forged Steel Wheel Company Will Build a Steel Plant.**—The Forged Steel Wheel Company, a subsidiary of the Standard Steel Car Company, Pittsburgh, is arranging to make its own steel. A large tract of land immediately adjoining the works of the wheel company, at Butler, Pa., has been purchased to be utilized as the site for a steel plant, which will consist of six 60-ton open hearth furnaces and a slabbing mill. The steel in the form of slabs will be used exclusively by the Forged Steel Wheel Company, whose plant has a capacity of 800 to 1000 steel wheels daily, running double turn. The McClintic-Marshall Construction Company, Pittsburgh, has the contract for erecting the buildings for the new works which will require about 6000 tons of structural material. Mackintosh, Hemphill & Co., Pittsburgh, will furnish a 55 x 60 in. reversing engine of about 7500 hp. for the slabbing mill.

The United Coke & Gas Company, 17 Battery place, New York, has closed a contract for the erection of 120 modern by-product coke ovens of the United-Otto system for the Dominion Iron & Steel Company, Ltd., Sydney, Cape Breton, Canada. The buyer selected this type of ovens after an investigation of the leading systems in this country and abroad. The surplus gas from the plant will be made use of by the steel works for illumination, heating and power generation.

The Jones & Laughlin Steel Company, Pittsburgh, last week closed a deal with the Pittsburgh-Buffalo Company for 5500 acres of coking coal lands near the Marianna mine of the latter company. The coal acquired by this transaction can be taken out through a new entry recently made by the steel company for its big Vesta No. 4 mine, at California, Pa., but will be held in reserve for future use.

The United Steel Company, Canton, Ohio, has increased its capital stock from \$750,000 to \$1,500,000. It will install at once three additional 50-ton basic open hearth furnaces and will then have six 50-ton furnaces. Contracts for the new furnaces, together with the equipment necessary, are now being placed.

Buying Carbon Tool Steel on Specification.\*

BY J. M. DARKE.

Three years ago the writer conceived the idea of buying carbon tool steel on a specification basis, in the same manner as many other materials used by large manufacturing concerns are purchased. When the subject was broached to those most interested it was received with little enthusiasm. The manufacturers of carbon tool steel were not in favor of the idea, as it removed at once the value of their brand of trade names, upon which they had spent years of advertising, and which represented the real difference between their steel and the steel made by competitors. The master mechanics and shop foremen were somewhat doubtful as to its success, as the idea was so radically different from the system under which they had been working for years. Many of them were men of long experience who had used certain brands of steel for years, and it seemed impossible to them that there were dozens of other brands equally good. It is also natural to feel that in adopting a scheme which removes the responsibility of making a choice in selecting steel, something quite personal has been lost.

Others objected to the idea on the ground that "chemical analysis was not the whole thing." This is true in a narrow sense. This same argument was advanced when the chemist was introduced into iron and steel foundries and various other industries. Through the lack of exercising ordinary common sense, the chemist came very near being an absolute failure in the iron foundry business. This would be the outcome if chemistry were applied in the same manner to a tool steel specification. Chemistry properly applied is a great aid in determining the quality of tool steel, but it will not tell whether the steel was made in an open hearth furnace or a crucible. The microscope will answer questions that chemistry cannot. The specification was, therefore, drafted to include both chemical and microscopical analysis.

A large number of American manufacturers of carbon tool steel were asked to submit samples representing their various brands. These samples were carefully analyzed, photomicrographs were made, and results compared. It was found that the steels grouped themselves into three grades, one about a 7-cent base, the second about a 14-cent base, and the third about a 22-cent base; the latter usually being a "double special" steel, and generally containing some alloy.

The various tool steel mills were visited by a committee, including the writer, and as representatives of a large consumer of tool steel, we were afforded exceptional facilities for investigating the plants. We found that all the mills visited were well equipped, both in men and apparatus, for making good tool steel, and that they were honestly trying to maintain a high standard. In short, there was no reason why any one of the mills visited could not produce as good steel as its neighbor.

With the above facts in mind, the following specification was drawn up and presented to the trade:

Specification for Carbon Tool Steel.

1. Tool steel to fill this specification will be required in five classes and three grades, as follows:

Class No.	Carbon, per cent.		
	Grade A.	Grade B.	Grade C.
Class No. 1.....	0.75 to 0.85	0.85 to 0.95	0.95 to 1.10
Class No. 2.....	0.85 to 0.95	0.95 to 1.10	1.10 to 1.25
Class No. 3.....	0.95 to 1.10	1.10 to 1.25	1.25 to 1.40
Class No. 4.....	1.10 to 1.25	1.25 to 1.40	
Class No. 5.....	1.25 to 1.40		
Manganese .....			
Silicon, not over.....			
Phosphorus, not over.....			
Sulphur, not over.....			

2. The steel to be crucible steel properly melted in crucibles, not so-called "crucible analysis," with the exception of Grade A, which may be acid open hearth steel.

3. The steel shall have been sufficiently forged to refine the grain, and forging stopped at such a temperature that the maximum refinement of grain will be obtained.

\* From the General Electric Review.

4. Steel containing the exact minimum amount of carbon in any class will be considered as belonging to the class below.

5. The steel shall be free from flaws and other imperfections.

The 22-cent grade of steel was discarded; being an alloy steel, it could not be included in a carbon steel specification. A very low grade was added to cover such steel as would be suitable in open hearth.

The various manufacturers were asked to quote prices on the different grades, which, with one or two exceptions, was done.

As an aid to the application of the specification the accompanying table, giving the class and grade of tool steel for various purposes, was compiled. Such parts are omitted as are not of general interest.

This table was compiled by a tool steel committee composed of representative men from the departments using tool steel. Each article was fully and carefully considered, and many of the selections (not appearing in table as printed) were the result of extended practical trials made in the shop under the supervision of a member of the committee. Valuable suggestions received from tool steel manufacturers were also incorporated. The table is subject to revision as experience renders necessary. New copies are issued to department heads and shop foremen whenever changes are made.

Table Giving Class and Grade of Tool Steel for Various Purposes.

	Grade A.	Grade B.	Grade C.
Class 1.	Drop dies.	Hammers.	Cold chisels.
0.75 to 0.85 C.	Dies for hammers in blacksmith shop.	Drifts. Punches. Hot chisels.	Cold sets.
Class 2.	Cams.		
0.85 to 0.95 C.			
Class 3.	Sheet steel for springs.	Lathe centers.	Miscellaneous steel for blacksmith shop.
0.95 to 1.10 C.			Miscellaneous steel for die room.
Class 4.	Spring (coil).	Springs (Spec.).	Large reamers. Sheet steel for slotting saws. Large dies. Large taps. Letters. Figures. Milling cutters over 2 in. in diameter. Drill rod. Milling cutters 2 in. under.
1.10 to 1.25 C.			Small dies. Chasers. Gravers. Dies for heading machines.
Class 5.			
1.25 to 1.40 C.			

#### How Steel Is Issued to the Departments.

When tool steel is required by the various departments requests for it are placed by the heads of departments with the stock and order department. These requests or orders are then referred to the laboratory department to insure that the proper class and grade of steel is specified for the work in hand. The orders are entered in a record book, OK'd and returned to the stock and order department for placing with the steel manufacturer. A copy of the requisition as placed with the steel manufacturer is also kept on file in the laboratory.

The tool steel is received by the receiving department, who notify the chemical laboratory and the shop foreman for whom the steel is ordered. The date of receipt is entered in the record book in the laboratory.

The shop foreman, upon receiving the steel, cuts off small samples, or in case of large bars, takes drillings and sends them to the laboratory properly marked. Analysis for carbon, phosphorus and sulphur is then made, and if according to specifications, the shop foreman receives a copy of the analysis, which constitutes a release and the steel may be used. If not in accordance with specification the inspection department is notified and the steel is rejected. Making the necessary records and analyses occupies very little time and costs on an average 50 cents per sample.

A brief statement of methods employed in the chemical analyses may be of interest. The carbon is determined by direct combustion of the drillings in a platinum tube, and requires 15 minutes' time. The phosphorus is determined by the Jones reductor method, and requires about 30 min. The sulphur is determined by the iodine titration method, and requires about 30 min. One op-

erator can make several phosphorus or sulphur determinations in very little more time than it required for one determination. Silicon tests are made occasionally and require 3 hours' time, only a small portion of the work demanding the chemist's attention.

Microscopical examinations were made frequently when the specifications were first adopted, but it was found that the steel ran so uniformly good in this respect that now the examinations are made only occasionally. This would be the first test made, however, in case of trouble.

#### Advantages of the Classification.

The steel is received without labels, but each bar is stamped with its class and grade, and the symbol designating the maker. For instance, steel of Class 5, Grade C, ordered from the Crucible Steel Company of America would bear the stamp when received, 5-C-A; of Grade B, 5-B-A, &c.

Before adopting this specification we had 109 brands of steel listed, ranging in price from 7 to 35 cents per pound, any one or all of which might be in the factories at any time. The individual shop foreman decided whether he would use one or the other. It was impossible to keep all these brands separate, and the brand was no guarantee that the carbon content would be right for a given purpose. We were apt to get a high carbon steel for a hammer and a low carbon steel for a milling cutter, as all tempers were carried in the same brand.

The specification has greatly simplified stock keeping, as now five classes and two grades cover 98 per cent. of our requirements. We have uniformity of product and a considerable assurance that the steel contains the right amount of carbon to render maximum service when used for the purpose for which it is intended. This is due to the fact that the selection of steel is governed by the table before referred to, entitled "Table Giving Class and Grade of Tool Steel for Various Purposes."

As there are only three grades of steel called for in the specification, we have only three base prices. This gives a uniformity of prices and a definite basis for figuring costs.

The failures in hardening have been reduced to a minimum, because the hardeners know from the class of the steel the amount of carbon contained, and, therefore, the proper annealing and hardening heats. With furnaces properly equipped with pyrometers, and the carbon content of the steel known, most of the elements of failure in hardening have been removed.

While the primary object of the specification was to secure uniformity, it has considerably reduced the total cost of tool steel. This reduction of cost has been obtained, not only by competitive bidding on the specification, but by selecting high priced steel only where it was needed. The total saving cannot be readily determined, since so many factors enter into the calculation, such as increased life of tools and less breakage in hardening of parts involving large amounts of labor.

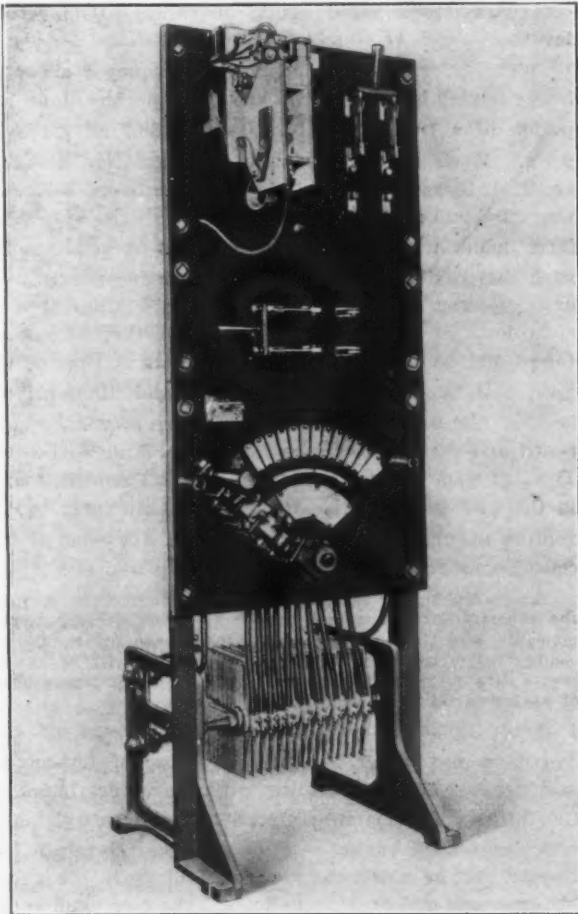
While the requirements of the rapidly developing automobile industry have been a very great blessing to the manufacturers of machine tools in the days of distress, a minor drawback is now becoming apparent. When work dropped off so suddenly after the panic many tool builders kept their shops going at least a part of the time and gave preference of employment to married men. The younger machinists were allowed to shift for themselves. It develops now, when efforts are being made to collect full crews, that a very large proportion of these younger men have found congenial and remunerative employment as chauffeurs of automobiles. The majority seem lost forever as a part of the labor constituency of the machinery industry.

The Westinghouse Machine Company, East Pittsburgh, Pa., in a recent week received orders aggregating 75,000 hp. for Westinghouse-Leblanc condensers for steam engines. Engine orders included a turbine and generator for the Jones & Laughlin Steel Company for its Aliquippa Works and a long list of orders for turbines and outfits for numerous other plants.



### The E. C. & M. Mill Type Motor Starters.

A new line of motor starters of especially substantial construction and particularly developed for use in rolling mills, from which the type takes its name, is now being introduced by the Electric Controller & Mfg. Company, Cleveland, Ohio. Designed as they are for severe service, the starters have some unique features. They are made in panels, have supporting feet and are completely self-contained. Several forms are furnished, from a very simple one with only the resistance cutting-out feature, to more elaborate ones with such additional parts as no-voltage release, overload protection for running and separate and different overload protection for



The Form A-4 Mill Type Motor Starter Made by the Electric Controller & Mfg. Company, Cleveland, Ohio.

accelerating. The illustration shows one of the most complete, the form A 4. The dimensions of the different forms vary only in height. The widths are the same, and nothing projects beyond the slate boards, so that starters may be placed side by side to form a continuous control board.

The device for overload protection while accelerating allows more current to flow through the motor during starting than during running. If a motor be connected to a load having large inertia—such as a hot saw or a press with a heavy fly wheel—the mere accelerating of the load demands considerable power. Since this starting is relatively infrequent, the motor will not be injured by employing a starting current in excess of the running current. Yet the starting time will be materially reduced. There are, in fact, numerous instances where it is desirable to allow an accelerating current larger than the running current.

Experience has shown that no-voltage protection which is secured by a spring return arm, is open to the objections that the spring is likely to be either broken or weakened, so that upon voltage failure the arm does not return to the off position; that the contacts may become so roughened that the spring is not powerful enough to move the arm, and that an ignorant operator may block the arm in the off position, so that it is im-

possible for the spring to properly perform its function. If, through any cause, the arm is not returned to the off position upon voltage failure, the motor will necessarily be subjected to a damaging overload upon the return of voltage. In the mill type motor starters, the danger of a broken or weakened arm spring is absent, because no spring is used. The no-voltage protection is secured entirely by a magnetic switch, which opens upon failure of voltage. This same magnetic switch in connection with an overload coil is used for securing overload protection. Since the overload feature must stand the abuse and have the characteristics of a circuit breaker, the maker believes that it should possess the advantages and breaking ability of a circuit breaker.

The following summarizes the features in the operation of this type of motor starter: The magnetic switch can be closed only by bringing the arm to the off position, preventing injurious overloads to the motor upon the return of voltage after voltage failure. The magnetic switch can be held closed to the arm on any accelerating step only by holding in a push button; this prevents leaving any of the starting resistance permanently in circuit, and thereby burning out this resistance. The magnetic switch will maintain itself closed only when the arm is at the full on position.

The resistance, fingers, contacts, &c., used are of the same design and kind of material that the maker uses in controllers for heavy service. This motor starter is therefore well able to stand the same abuse and severe service which the most ruggedly constructed mill type motor can be expected to encounter.

### J. Kent Smith and the American Vanadium Industry.

J. Kent Smith, who three years ago came from England to accept the position of chief metallurgist with the American Vanadium Company, Pittsburgh, has severed his connection with that company and will return to his native country. He will sail August 21. Mr. Smith's experience in the manufacture of steel and vanadium in England covered about 10 years, during which time he contributed valuable articles to the trade press at home and abroad. The American Vanadium Company saw the future possibilities of vanadium in steel making in America, and upon acquiring the large deposit of vanadium ore in Peru, it engaged Mr. Smith to carry this work to a successful conclusion. A plant was built near Pittsburgh for the production of the metal for commercial uses, and Mr. Smith was placed in charge. His experience proved of great value, while his untiring efforts did much to secure favor for this valuable steel alloy from the steel makers and the United States Government. His ideas were adopted, and to-day thousands of tons of vanadium steel products, such as rails, armor plate, crank shafts, locomotive frames, automobile parts, &c., are being used in America and abroad. The plant of the company has been greatly increased in this time. Mr. Smith will continue to give his attention to steel making, vanadium, &c., although most of his work will likely be in a consulting capacity. It is possible that he will locate in London.

In one day recently the various departments of the works of the Youngstown Sheet & Tube Company, Youngstown, Ohio, made the following output, in gross tons: Pig iron, 1273; steel, 2216; skelp, 1293; scrap bar, 132; rods, 353; pipe, 997. The usual amount of black, galvanized and barbed wire and wire nails was produced. The output of pig iron here noted was made by two stacks, which have been averaging over 500 tons a day each for some time.

The outlook for the British rail mills is reported to be unsatisfactory. New inquiries are scarce. A sale of 12,500 tons of 80-lb. rails for New South Wales, made by Bolckow, Vaughan & Co., Ltd., is the largest recent business.



# THE IRON AGE

Established in 1855.

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## Speculative Buying.

Commenting on the increased activity in various industries in the early fall of 1908, due to the expectation that the outcome of the elections would be favorable to business, the *Valve World* says that "even ordinarily conservative and sane business men placed orders, not to meet existing demands, but to prepare for what the future might bring. That is, they gambled in the goods usually handled by them. They played for an advance in prices, for an increase in demand." Following on to the results of this movement, the article says:

These increased orders caused factories to become more active, to employ more men, to buy more raw material. In some instances factories were crowded to their capacity. There was a general "spurt" all along the industrial line. It looked like a "business revival," and superficial observers thought the period of dull trade had passed. We have good reason to believe that this is not a mere guess at what was going on pretty generally throughout the country. There is no doubt, for instance, that largely increased orders for standard brass goods were not warranted by the then existing trade conditions; but that undoubtedly they were placed under the impulse of a speculative belief that there would be an advance in brass goods immediately following the election of Mr. Taft.

But the advance failed to come. Possibly uncertainty due to changes that might be made in the tariff had a further depressing effect on business, but at any rate the tendency of copper has been downward rather than upward. We do not believe that this gambling in orders, this speculating in futures, is a good thing for business, and conservative manufacturers will take every opportunity to discourage such a tendency on the part of their customers.

What is described as a feature of the brass goods trade in the fall of 1908 was seen also in iron and other industries. It was a very moderate speculation, with only a temporary effect on pig iron, the one department of the iron industry in which no attempt was then made at co-operation. Buyers anticipated their wants for the first quarter of 1909, apparently sharing in the belief expressed in some quarters that the country was about to enter upon a period of widening consumption and that confidence had returned, sufficiently energetic to overcome any menace of tariff uncertainty. The advance in prices lasted into the new year; then came a gradual crumbling, aided later by the cuts in steel products. In time demand asserted itself and the pig iron prices realized on a comparatively small part of the movement in the late months of last year have now been again reached on heavy buying and passed.

The habit of buying in anticipation of wants is well fixed in the iron trade. Recognizing its harmful possibilities manufacturers of iron and steel products, where they have been able to maintain a measure of agreement among themselves, have tried to restrict the contract term. Three months to jobbers and six months to manufacturers have been the limits enforced at times on certain

rolled products. After every period of decline the manufacturers have been on their guard against "speculative buying." The reason was in part to get the benefit of later advances if the forward movement proved to be a real one, and partly to keep the market free from resale material marketed by buyers who had recognized bargains in prices present rather than, as usual, in prices just withdrawn. In pig iron, in particular, anticipatory buying has long been practiced. Beginning in trades in which each year has its season for the marketing of product, and hence costs must be approximately known a year in advance, it has been an important element in the early stages of every boom and has often contributed to a rapid lifting of values to dangerous levels.

What is criticised in the comment quoted above is heavy buying by distributors and other dealers in anticipation of a trade revival and consequent advances in price. Much as certain kinds of speculation are discredited, there is a speculative element in all business, the elimination of which need not be expected. The large manufacturer in particular must reckon broadly with the possibilities of invention, of financial crises, of crop disaster, of new legislation, of new lines of consumption. To exercise his judgment on the outcome of forces and tendencies difficult to measure at close range gives zest to his pursuit of success, and differentiates between the man who sees things before they have happened and the one who sees them by looking backward. The late Karl Wittgenstein, the Austrian Carnegie, found in the willingness of the American manufacturer to adventure on uncertain ground the reason for some of his conspicuous successes. On this point he wrote:

A man lacking the speculative mind, a manufacturer without the capacity for taking into consideration, besides the visible moments, also the uncertain ones lying in the future, and of coming to corresponding decisions, even at the risk of having events turn out quite differently, is unfitted for the management of an industrial establishment.

With important differences, the problems of the merchant, the trader, are yet like those of the manufacturer in constantly dealing with the uncertainties of the future. The manufacturer is a buyer as well as a seller, and good buying is often no small factor in his results; but he must find his profit chiefly in the value his processes add to what he buys. The merchant, turning over his purchases unchanged, must study all the more sharply what and when to buy and at what price.

It is not likely that the merchant's business will ever be reduced to a basis of purchases at periodic intervals, at whatever price may prevail. It has sometimes been argued concerning finished steel products that buyers are chiefly concerned that they pay no higher price than their competitors pay, and that what the price is is of relatively small account. That view overlooks the factors of varying initiative, financial ability, business instinct, insight, foresight and a hundred other things that separate between a prodigy of business success and a failure. It is inevitable that the man with capital and courage to back his judgment will at times buy heavily when prices are low. There may be false starts after depression; but since there is no means of obtaining a consensus of the business world as to the proper time to start, the impulse of business men to do business may be expected to exercise itself tentatively from time to time until the way opens and prosperity becomes a recognized fact.

Plainly the tendency has been in recent years, under the concentration of production, toward a stability that has reduced price fluctuations and eliminated some of the risks of business. But we are still some distance

from a regime in which trade proceeds by the orderly process of regular stock renewals, however desirable from some points of view such a condition might be.

### The Semi-Centennial of a Militant Union.

The International Iron Molders' Union of North America celebrates this year the fiftieth anniversary of its founding. In some commemorative articles recently published in its *Journal* the vicissitudes of the organization are recounted, and the triumphs and defeats of its successive administrations. The record is naturally tinged with pride in the net result—the building up of one of the strongest labor unions in the country, one noted for the extent to which it has been able to control the labor supply in its trade. That it has had robust leadership, whose aggressiveness was never open to question, whatever might be said at times about the lawlessness of its plan of attack, the foundrymen of the country have had frequent proof. That at times it has had leadership of signal ability, and that among those prominent in its councils it has had men representing a high type of manhood, will be conceded by employers who have met its representatives in repeated conferences. The fact could not be missed, however, by those who have studied at close range the workings of this organization in the years of its greatest numerical strength that those of its leaders who advocated meeting new conditions with advanced measures have not carried the organization with them. In the main the policy of the Iron Molders' Union has been to recognize foundry progress as history, but never to anticipate or encourage such advance. That the foundryman constantly had to face new conditions and that alert competition was deciding many of the questions which the molders' union set out to determine for him are underlying facts of much of the war history of these fifty years.

Retrospect takes away something of the bitterness of conflict, and while this story of fifty years is largely a record of strikes won and strikes lost there is a hopeful sign in the important place the molders' historian gives to conciliation and peaceful methods. It is conceivable that the president of even so warlike a union can pay tribute in his gratulatory message to "the principles of justice and fair play, the recognition of mutual rights of employers and employees," &c. Militant employers say such things, too, with similar mental reservations as to the practical application of their fair sounding words. There may be some difficulty in adjusting the statement that the Iron Molders' Union has "made most marked progress" in the field of conciliation to another nearby declaration—namely, that the organization's "principles and policies have been tried and not found wanting," but this again is perhaps a question of the point of view.

In all the historical matter which celebrates this important anniversary nothing appears to signalize the advances in the molder's craft. We find nothing bespeaking the pride of the organization in the higher standard of skill which has come with 50 years of struggle to improve molders and molding. Historical articles dealing with the iron industry are usually full of comparisons between the old days and the present—for instance, the evolution from the 5-ton blast furnace to the 500-ton prodigies of to-day—and we marvel at records of progress that read like romance. For some reason the chronicler of the triumphs of the Iron Molders' Union has not adventured on any such ground. Or is it too much to expect the "state of the art" to be a matter of concern to even so great a division of the union labor army?

### Government Help for Foreign Trade.

Secretary Knox has asked Congress for an appropriation of \$100,000 for the scientific development of a government foreign service which shall specialize in the building up of our foreign trade. In supporting the request the Secretary says, in part:

This Government has for years been struggling to keep open the commercial, financial and business opportunities in the foreign field and to encourage, foster and guide the efforts of those American interests which have hitherto made foreign business a serious aim. The State Department has been seriously handicapped by lack of sufficient funds to make possible a scientific specialization and co-ordination and a well trained, adequate and well organized foreign service. All countries are now turning their attention more to foreign trade, and there is a new era of commercial expansion. By a fortunate coincidence the development of the resources of the United States has so synchronized with this world movement that the moment when intense competition makes it well nigh impossible for any Government to hold open opportunities unless they be availed of is also the moment when surplus production and accumulated wealth in all parts of the United States place men of business in a position energetically to assail foreign markets and to avail of foreign opportunities. China and Latin America are recognized by the world as the regions of greatest potentiality as fields for foreign commerce and investment, and it happens that China and the rest of the Far East and Latin America are geographically, by tradition and by common consent, pre-eminently adapted for American enterprise. In both of these regions the ratio between present development and the amazing statistics which by every law future history will record is too well recognized to require statement. In both individual effort must be encouraged and supported by the instrumentalities of the foreign service in its departmental, diplomatic and consular branches in order that Americans may compete upon even terms with their commercial rivals.

The machine tool trade realizes the practical advantages which have come from the careful investigations of conditions abroad by a capable government expert. The knowledge obtained from these systematized and exact reports has already been a source of much profit, and promises to have an increasing value as time goes on. Other governments, notably Germany, have reaped great rewards for studying and exploiting foreign markets for the benefit of their manufacturers and merchants. Private enterprise is always of first importance in developing new fields of trade, but the efforts of the individual are much more effective when backed up by government influence. The recent establishment at Peking of the American Branch of the International Banking Corporation, the creation of a chain of American banks in the Latin-American states, the insistence of the government that Americans be permitted to participate in the new Chinese loan—all these developments, carrying with them the investment of American capital, are highly important. They emphasize what Secretary Knox says of the timeliness of well directed expenditure for the creation of a demand for American products in China and the Central and South American countries. The question has frequently been raised whether the return from the trade promoting machinery now provided through the consular service is at all commensurate with the outlay. The proposed expenditure looking to a businesslike organization for trade promotion might well prove an exceedingly profitable investment. It is to be hoped the "scientific specialization and co-ordination" will not prevent the pursuit of the most direct lines of actual business promotion.

### An Alluring Field of Industry.

The large number of manufacturers who have been planning to produce automobile parts promises to be materially increased by the announcement of the automobile builders that they are unable to secure enough parts to make the output planned for 1910. Many works have already departed from their established lines of opera-



tion to take advantage of the newer industry, and in a large proportion of these cases the new products are closely enough akin to those they superseded to make previous experience a most valuable asset. The influence of this industrial movement has been widespread. Inventors have had an important part in it and have profited thereby, for they have had little difficulty in securing the production of their devices if these had merit, and even when they were not what their enthusiastic originators believed them to be. To-day the movement is taking in many manufacturers whose previous training has been in other directions, and the departure may be too radical to be wise. Enthusiasm for the new product may mean the neglect and serious injury of the old.

At the present time the successful automobile part brings the handsome profit which a specialty usually commands. But, as with every other business, the time must come when competition will get down to the normal basis, with profits reduced to the usual level. Thousands of inventors are working on new means to accomplish the same ends and improvements are coming in quick succession. The automobile builder will not himself become a competitor for many of these new parts, for he has learned the wisdom of relying upon the specialties of others. But after a while there will be more than a few competitors in every one of these various lines, and success will come to depend upon the selling and manufacturing ability of the management. The possibility must also be taken seriously into account that the present tremendous pace of the automobile industry may not be maintained. It is doubtful if the country can continue to absorb anything like 150,000 or 200,000 cars annually, even with a greatly increased foreign market for American built machines. The business has a brilliant future, doubtless, but there is always a limit to consumption, and failure to realize this must lead to overdoing. Therefore, the manufacturer who is well established in another business should look a few years ahead in considering the transfer of his best efforts to this new line. It is a question if he will make more money in the end by dividing his energies. If he decides to make the attempt it is because of the attractiveness of larger profits. Yet, unless the industry has a history different from that of similar ones its net earnings must gradually fall. Some manufacturers may continue to do well because of ability to keep ahead of their fellows. On the other hand, the manufacturer who sticks to his old product may also go ahead, because he is able to distance his competitors and take more than his share of the market. He need not fail to take advantage of the new industry in every possible manner to increase his own sales, but too abrupt a change—the putting off of the old to take on the new—may bring many reasons for regret.

**The New Cleveland Chipping Hammer.**—The Cleveland Pneumatic Tool Company, Cleveland, Ohio, is bringing out a new design of chipping hammer, especially adapted to the chipping of steel and gray iron castings and steel billets. In chipping castings and billets, the operator cannot hold a hammer as steadily as in chipping steel plates, owing to the surface inequalities and shape of the material being worked. The lack of a steady resistance to the cutting edge of the chisel often causes it to slip from the operator's control, sliding out of a correct position in the hammer and permitting the plunger to strike the bushing shoulder of cylinder, often breaking both of these parts. The new hammer construction corrects this trouble. The moment the chisel slides out of the correct position, the plunger cuts off the air supply automatically and the hammer ceases to run until the chisel is again placed correctly.

## CORRESPONDENCE.

### The Calculation of Quality Figures.

*To the Editor:* In the rule that I proposed in *The Iron Age* of July 29 I am afraid that I have in one particular expressed myself unfortunately and used certain words that do not with certainty convey my meaning. The direction, "Find what per cent. the elastic limit is of the best elastic limit that could be expected," would better read: "Find what per cent. the elastic limit is of the best elastic limit ever found in any steel of any class." In the absence of definite knowledge on this point, it would seem that any approximate and arbitrary figure, provided it is high enough, and is always adhered to, will serve; so also of the other factors, shock or alternations and hardness.

GEORGE AUCHY.

TACONY, PA., August 3, 1909.

### New Construction at the Gary Works.

CHICAGO, August 9, 1909.—Construction work on the new finishing mills at the Gary Works of the Indiana Steel Company is being vigorously pushed. By August 15 it is expected that regular rollings of 4 x 4 in. billets will begin, and by the end of the month the mill will be in readiness to turn out smaller sizes. A few trial passes have already been made, so that except in minor details this new addition to the steel producing capacity of the works is practically completed.

The next in order of construction are the merchant mills, of which the 14 and 18 in. structural mills will be the first ready for service. The buildings for these mills are almost finished, and the machinery is already on the ground for installation; they should be ready for commission by the end of the year. Foundations for the sheared and universal plate mills are very nearly ready for the superstructures, the erection of which will be begun at once and proceed in unison with the construction of other unfinished departments. A site for the axle mill has been prepared and foundations are being laid, but neither it nor the plate mills will be started until some time next year. The No. 1 open hearth department is about half completed. The steel framework of the building and the stacks are up, but actual construction of the furnaces has not been begun. It is scheduled for operation on or before the first of the year, when the plant will have a total of 42 open hearth furnaces.

The latest and not the least notable addition to the works actually under construction is the Koppers by-product coke plant, consisting of 560 ovens. Contracts have been let for the fabricated steel to be used in this structure, but it will be some time before the foundations now under way are ready to receive it. Of the prospective plants that will eventually be included in these colossal steel works, it is now practically certain that the next to be installed will be 50 sheet mills and 50 tin plate mills, which will occupy a site west of the main plant on the lake shore. While no official announcement has been made of further future plans, it is not doubted by those conversant with the situation that the Gary plant will be rounded out by the addition of wire mills and pipe and tube mills at no distant day.

The Link-Belt Company, Nictown, Philadelphia, Pa., advises us that the description of the Virginian Railway Company's coal pier given in *The Iron Age* of July 22 omitted mention of the Link-Belt Company's work, which consisted of the designing, building and erecting of the 62 improved coaling chutes and the operating mechanism for each. These chutes are not a common form of apparatus, but are a distinctive type of time saving device in a service to which attention was directed in *The Iron Age* for March 4, 1909, page 724.

A development of great interest is the opening of operations by the Oliver Iron Mining Company, at North Freedom, Wis., not far from the center of the State. It is reported that an initial expenditure of \$250,000 has been determined upon.



## High Priced Sheffield Steel and the New Duty. The Dodge Mfg. Company and Its President.

The expectation of the passage of the proposed duties on higher priced steels seems to have been variously received among Sheffield, Eng., manufacturers of tool steel. One of our London contemporaries says:

The proposed increase in the United States tariff on high-class steel, if it comes into operation, is likely considerably to affect Sheffield, inasmuch as it has been particularly in high-class steels that Sheffield has maintained its connection with that market. Cheap steels have for a long time been practically an unknown quantity in Sheffield exports to the States, and the new duty, if carried, will, it is feared, have results very detrimental to the trade in the higher grades of steel. It is now proposed to impose an ad valorem duty of 20 per cent. upon all steel valued at 40 cents per pound and upward. This increased duty, we are informed, affects not only high speed steel, but also the higher qualities used in the manufacture of superior cutlery, including surgical instruments.

Another British engineering paper reflects the view that the increased duty on the highest priced steels will make little or no difference with the Sheffield manufacturer, since his American customer will have to foot the bill:

The Americans are undoubtedly very sore about the fact that Sheffield has robbed them of the trade in high speed steel, and the duty now imposed is looked upon as a kind of counter attack, but a member of the firm which produced the new steel, so much talked about a few months ago, states that, of course, the Americans themselves will have to pay. They would still have to get the best quality steel from Sheffield. A member of another firm, that is at present doing very well with the States, said that undoubtedly the fear of the tariff had accelerated orders from American engineers, and allowing for that it was not expected that there would be much falling off in trade, if any. Manufacturers of the best qualities were not alarmed, but were quietly confident that the Americans could not do without their steel.

That Sheffield has "robbed" manufacturers in the United States of their trade in high speed steels will be regarded as in the nature of news on this side. At all events, it will be worth while to await the actual working of the 20 per cent. duty on the highest priced steels to decide whether the "quietly confident" Sheffield manufacturer or the one who "feared results very detrimental" has more accurately diagnosed the situation. The London *Ironmonger's* Sheffield correspondent strongly inclines to the view of the latter when he says:

The effect of the new American tariff on local trade is likely to be serious. Sheffield cannot gain appreciably by the reductions of duty, while it stands to lose heavily through the increases. The details of the new scheme disclose what is obviously a carefully-planned attempt to drive the Sheffield high-speed steel out of the market. The duties on some lower grade steels are reduced, but the United States can supply her own needs in such qualities, her purchases from Sheffield being mainly confined to the very best. Five or six local firms have for some years done a considerable and highly remunerative business with the United States in high-speed steels, and they fear that the higher duties will make the price of the material prohibitive in that country, resulting in a serious shrinkage of sales. Two Sheffield houses who possess facilities in the United States for making steel may find it desirable to produce high-speed steel there for the American market, and so escape the duties.

**A Great Hydroelectric Project for Vancouver Island.**—Among the large hydroelectric projects now under way on the Pacific Coast, one of the most notable is that on the Coquitlan River on Vancouver Island, which is being executed by the British Columbia Electric Railway Company and the Vancouver Power Company, Ltd., Vancouver, B. C. This involves the enlargement of the present plant from a capacity of 30,000 hp. to a maximum of 70,000 hp.; and to accomplish this the bore of the Coquitlan Tunnel is being increased from 9 x 9½ ft. to 12 x 15 ft. This tunnel, which connects Coquitlan Lake with Lake Runtzen, is 2½ miles in length. Included in the improvements is the construction of a dam in the Coquitlan River about 700 ft. long and 90 ft. high. The power plant is located about 16 miles from Vancouver on the north arm of Burrett Inlet. Work under the direction of Geo. S. Blackley, chief hydraulic engineer, has been in progress four months, and will not be completed for a year and a half. Plans are being prepared by the same interests for the development of another water power plant on Vancouver Island, current from which will be transmitted to Vancouver and Victoria.

In a recent industrial parade in the city of Mishawaka, Ind., a most interesting story of the development of the Dodge Mfg. Company was given in a series of paintings arranged on floats. First was a picture of the cradle of the company in 1878, when in a little frame shop woodenware was made and sold to dealers in that section. Then followed paintings showing the destruction of the factory in 1879, and a demonstration of push in workmen busy on the foundations for a new and larger structure nearby while the embers were yet smoking, and the birth of the Independence wood split pulley; the Dodge American system of rope transmission introduced in 1883, following the granting of letters patent for the wood split pulley; the addition of iron goods in 1890, when the Dodge idea—standardization and interchangeability—was applied to iron split pulleys, hangers, friction clutches, &c., and finally the plant to-day, a mammoth industry covering almost 85 acres of ground and manufacturing everything for the mechanical transmission of power, elevating and conveying machinery and the Eureka water softener and purifier.

Wallace H. Dodge, founder of the company, died in 1894, after his dream of stocks of his pulleys carried in all the manufacturing centers of the world had been realized, but with the country in the midst of a panic. It was in this trying period that Melville W. Mix was made president and general manager. He had been the Chicago manager and later the sales manager, and was only 28 years old when he assumed his new responsibility. The company came out of the crisis with colors flying, and the capitalization was later increased from \$250,000 to \$1,000,000, with a large surplus to-day. Mr. Mix has not only been successful in his management of the Dodge Company, but has made his business acumen felt in other lines. He is president of the National Veneer Products Company, maker of the Indestructo trunks; president of the Mishawaka Trust & Savings Company, one of the leading financial institutions of northern Indiana; president of the Mishawaka Public Improvement Corporation; owner of the \$100,000 Hotel Mishawaka; a director in the Simplex Motor Car Company, manufacturer of the automobile which cut quite a figure in the Glidden tour, and a stockholder in a number of other industrial and commercial enterprises. He is treasurer of the Manufacturers' Bureau of Indiana, and was president of the American Supply & Machinery Manufacturers' Association in 1908. He has always taken a lively interest in politics and for two terms was Mayor of Mishawaka, accomplishing much for the city's good.

### The Lake Superior Ore Movement in July.

July shipments of Lake Superior ore were 6,693,025 gross tons, though in view of the flood on the Mesaba range it was not expected that more than 6,000,000 tons would be moved. It is noteworthy that for this single month there should be sent from upper lake ports only a few hundred thousand tons less than the entire season's shipments up to August 1 last year. The table below gives a comparison with 1908 for the month of July and for the season to August 1:

	July, 1909.	July, 1908.	To Aug. 1, 1909.	To Aug. 1, 1908.
Escanaba .....	884,271	483,552	2,016,505	754,293
Marquette .....	450,738	228,775	870,961	345,789
Ashland .....	449,163	321,361	1,061,187	592,939
Superior .....	1,111,533	633,224	2,576,110	1,111,887
Duluth .....	2,249,410	1,655,125	5,434,135	2,819,934
Two Harbors...	1,547,912	1,044,246	3,436,452	1,610,439
	6,693,025	4,864,283	15,395,350	7,235,281

In view of the rapid expansion in pig iron production in the past month there is a disposition to increase somewhat the original estimate of 36,000,000 tons of ore from Lake Superior in 1909. The record made in 1907 was 42,266,668 tons, of which 41,288,755 tons was shipped by water. The 1908 movement was 26,014,987 tons, of which 25,427,094 tons was by water.

### The Meurer Brothers Company Making Tin Plates at Washington, Pa.

Announcement is made by the Meurer Brothers Company, Brooklyn, N. Y., that in order to care for its increasing business in high grade roofing plates, which have been manufactured for years at Long Island City, a new plant has been established at Washington, Pa., where it has excellent facilities for procuring raw material, conducting all the processes of manufacturing and shipping. The plant is located on the tracks of the Baltimore & Ohio and the Pennsylvania railroads, which allows direct shipments from the works to any point in the country, and it is the company's intention not only to make its well known brands, Meurer Old Method, Meurer Roofing, Flushing, Pullman and others, but it proposes to make any grade of plate that may be desired by trade requirements.

The new plant has been in operation now for about three weeks and it will shortly be running three 8-hr. shifts. Many improvements have been made by the company in this plant over the old one which was formerly operated. Tinning stacks have been erected on a special plan, and a number of interior changes have been made as well, and the company feels that it has one of the best tin house plants in the country. The operating of this plant is in the hands of C. E. Brock, who has been superintendent of the Long Island City plant for a number of years and is familiar with the requirements of the trade.

The marketing of these plates will be conducted as heretofore, through the main office of the Meurer Brothers Company in Brooklyn, and with its branch houses and agents in various cities throughout the country it will be able to fill any demand very promptly. The company desires to call the attention of the trade to the fact that it is now manufacturing all kinds of conductor elbows and shoes in galvanized and copper as well as continuing to make conductor pipe and eaves trough of all gauges. There has also been installed recently at the Brooklyn establishment a new smelting department, where all grades of solders are being made of strictly new metals, and this product is meeting a gratifying demand, as is also its babbitt metals. A steady demand is reported for the Meurer specialties, Anchor ventilators and metal tiles.

### Canadian Scrap and Iron Ore.

TORONTO, August 7, 1909.—The reduction of the United States duty on scrap iron and steel from \$4 to \$1 a ton is not welcomed by Canadian makers of iron. It will tend to raise the price of the old material still further than the relatively high point to which it has already been brought by the demand. As Canada's railway mileage grows and her consumption of all forms of iron and steel expands the supply of scrap increases in pretty much the same ratio as does the output of the iron and steel plants. Canadian plants could use more scrap than they have been getting at home, but the price has been too high to make any large importation of it profitable. Though the duty on wrought iron and steel scrap is now but \$1 a ton under the general tariff, 90 cents a ton under the intermediate tariff and 50 cents a ton under the preferential tariff, and though the scrap recovered from vessel wreckage found in waters subject to the jurisdiction of Canada is free, the importations of scrap iron and steel in the last fiscal year have been insignificant. But in that year exports of Canadian scrap were valued at \$109,000.

The reduction in the United States duty on iron ore from 40 cents to 15 cents a ton will not make any appreciable difference to Canadian consumers of ore. This does not mean that the outlook for a considerable enlargement of the exports of Canadian iron ore to the United States is not considered to be improved by the change in United States duty. It is thought probable that the Helen mine, the Moose Mountain mine, the Atikokan mine and possibly other deposits in Ontario will be rather freely drawn upon for shipment to the

United States furnaces that require other than domestic ores for mixing purposes. But no matter how much Ontario ore goes to the United States it will hardly be missed by the Canadian furnace companies, as the bulk of what they use is imported. It is stated that the Algoma Iron Company expects to be able to run its furnaces chiefly on Ontario ore, and the pig iron made at Port Arthur will be the product of ore taken from the Atikokan mine, but the main part of the ore used in Canada will for some time continue to come from the United States and Newfoundland.

C. A. C. J.

### The New Philippine Tariff Law.

WASHINGTON, D. C., August 10, 1909.—The bill making a comprehensive revision of the Philippine tariff, which originated in the House of Representatives last December, was agreed to in both Houses during the closing hours of the session, which ended on the 5th instant, and was signed by the President immediately after he appended his signature to the Payne tariff bill. The Philippine act becomes effective October 4. Under the terms of the Philippine section of the Payne tariff act, however, all products of the United States and of the Philippines are reciprocally entitled to free entry, except Philippine rice, which is dutiable, and Philippine sugar and tobacco in excess of certain specified quantities, which will be required to pay full duties.

The text of the metal schedule of the Philippine bill was published in full in *The Iron Age* of April 22. It represents an average ad valorem of about 20 per cent., which will be the measure of the advantage enjoyed by American manufacturers and exporters.

#### A "Substitution" Drawback Provision.

Great interest has been aroused among customs officials here by the discovery that the new Philippine tariff law contains a drawback provision similar in scope to the so-called substitution section originally incorporated in the House draft of the Payne bill, but eliminated by the Senate Finance Committee because of the belief that it would afford opportunities for frauds upon the revenue. This section is fully as broad as the French drawback law and provides as follows:

Upon the exportation of articles manufactured or produced in the Philippine Islands, including the packing, covering, putting up, marking or labeling thereof, either in whole or in part of imported materials, or from similar domestic materials of equal quality and productive manufacturing quality and value, such question to be determined by the insular collector of customs, there shall be allowed a drawback equal in amount to the duties paid on the imported materials so used, or where similar domestic materials are used, to the duties paid on the equivalent imported similar materials, less one percentum thereof: *Provided*, That the exportation shall be made within three years after the importation of the foreign material used or constituting the basis for drawback: *And provided further*, That when the articles exported or coverings thereof are in part of materials grown or produced in the Philippine Islands not subject to drawback under this act, the imported materials, or the similar domestic materials of equal quantity and productive manufacturing quality and value entitled to drawback, shall so appear in the completed articles or packages that the quantity or measure thereof may be ascertained: *And provided further*, That the imported materials, or domestic materials entitled to drawback under this act, for which drawback is claimed, shall be identified; that the quantity of such materials used and the amount of duty paid thereon or if domestic materials, paid upon its equivalent, shall be ascertained; and that the fact of their exportation shall be established; and the refund if made shall be paid to the manufacturer, producer, or exporter, to the agent of any of them or to the person such manufacturer, producer, exporter or agent shall, in writing, order such refund paid, under and in accordance with such rules and regulations as the insular collector of customs may prescribe: *Provided*, however, that no drawback shall be paid under this section on account of any articles, goods, wares, or merchandise exported to the United States of America or to any Territory or place under the jurisdiction and the control of the Government thereof, wherein such articles, goods, wares, or merchandise are admitted free of duty.

Much curiosity has been expressed here as to how the substitution drawback section above quoted succeeded in making its way through the Senate in view of the attitude of the Senate leaders respecting the similar provision of the Payne bill. The explanation is not far to seek. While the Ways and Means Committee drafted both bills and supervised their consideration in the



House, when the measures reached the Senate they were referred to two different committees, the Payne bill going to the Finance Committee and the Philippine bill to the Committee on the Philippines, of which Senator Lodge of Massachusetts is chairman. The members of the Philippine Committee favor exceedingly liberal customs laws for the Philippines, and therefore reported the administrative features of the bill practically in the form in which they were drafted by the Ways and Means Committee. The administration of the drawback section will be followed by customs experts here with close attention, and if it proves successful there is strong probability that it will be incorporated in the Payne tariff law in the near future.

W. L. C.

### Canadian Pig Iron Production in 1909.

The production of pig iron in the Dominion of Canada in the first six months of 1909 was the largest for that country in any half year, the best previous record being 311,046 tons, in the second half of 1907. It also exceeded the output of any whole year prior to 1905. The following table gives the half-yearly production in gross tons, beginning with 1906:

	1906.	1907.	1908.	1909.
First half.....	282,010	270,100	307,074	349,641
Second half.....	259,947	311,046	256,598	.....
Totals.....	541,957	581,146	563,672	.....

The production of Bessemer pig iron in the first half of 1909 was 99,639 tons, against 52,586 tons in the last half of 1908 and 60,225 tons in the first half of that year. The production of basic pig iron in the first half of 1909 was 165,112 tons, against 140,201 tons in the last half of 1908 and 195,209 tons in the first half. The production of bituminous pig iron in the first half of 1909, including a small quantity of ferrosilicon made with electricity, amounted to 347,482 tons, against 255,407 tons in the last half of 1908 and 302,276 tons in the first half of that year. In the first half of 1909 the production of charcoal pig iron amounted to 2159 tons, against 1191 tons in the last half of 1908 and 4798 tons in the first half.

On June 30, Canada had 16 completed blast furnaces, of which 10 were in blast and six were idle. Of this total 12 were equipped to use coke and four to use charcoal. In addition one coke furnace was being built at Midland and work is about to be resumed at Sault Ste. Marie on a furnace partly built in 1901, while the construction of a new furnace will soon begin at Sydney, Nova Scotia.

### The Atikokan Iron Company's Furnace in Blast.

TORONTO, August 7, 1909.—After being out of blast for nearly two years, the furnace of the Atikokan Iron Company, at Port Arthur, on Lake Superior, was re-lighted August 2. The shutdown in 1907 was an incident of the depression of that year. The present starting up is a consequence of trade revival and especially of higher prices for pig iron. During the period of idleness improvements were made in the plant. Machinery by which considerable labor will be saved has been installed. A Covington coke drawing and loading machine, driven by electricity, takes the place of 30 men, by whom the coke ovens were formerly served. Plenty of material has been assembled to keep the plant going for some time. Though the Atikokan mine, from which the ore is brought, is 134 miles distant, there will be no difficulty about keeping up the supply. The Canadian Northern Railway Company, over whose line the ore is shipped, is controlled by the ascendant interests in the iron company. Fifty steel hopper bottom cars and adequate motive power are at the disposal of the ore traffic. A locomotive crane with a bucket and adequate attachment has also been added to the output of the plant. The engine room has been completely overhauled, and a repair shop has been added. At the mines a large gang of men has been busy for weeks getting out ore. As a result partly of the economies effected and partly of the advance in the price of

pig iron the company's position has been greatly improved. The capacity of the furnace is 125 tons a day. The ore is roasted, to free it from sulphur. For this treatment of it there are 16 Roberts roasting furnaces. The officials of the company are: D. D. Mann, president; J. Dix Fraser, general manager; A. J. Mackay, furnace superintendent; F. Rodda, mine superintendent; J. A. Kennedy, accountant; J. Orchid, chemist.

C. A. C. J.

### Pennsylvania's Coal Output in 1908.

The total production of coal in Pennsylvania in 1908, as reported by the United States Geological Survey, was 200,448,281 net tons, having a spot value of \$276,995,152. This included 74,347,102 gross tons (equivalent to 83,268,754 net tons) of anthracite, with a spot value of \$158,178,849, and 117,179,527 net tons of bituminous, with a spot value of \$118,816,303.

The production of both anthracite and bituminous coal in Pennsylvania in 1908 was less than in 1907, but owing to the fact that anthracite no longer enters to any great extent into manufacturing industries, it was less seriously affected by the financial depression than bituminous coal. The aggregate production of both kinds in 1908 showed a decrease of 35,299,208 net tons, or 14.97 per cent., in quantity and of \$42,252,930, or 13.24 per cent., in value from that of 1907. Of the total decrease, 2,085,319 gross tons (2,336,558 net tons), or 2.73 per cent., in quantity, and \$5,405,207, or 3.3 per cent., in value, were in the production of anthracite. Notwithstanding the decrease the output of anthracite in 1908 was, with the exception of 1907, the largest ever obtained, and exceeded that of 1906 by 10,702,092 gross tons in quantity and \$26,261,155 in value. The decrease in the production of bituminous coal in Pennsylvania from 1907 to 1908 was 32,963,650 net tons, or 21.95 per cent., in quantity, and \$36,847,723, or 23.67 per cent., in value.

In the bituminous coal mines the number of mining machines employed and the percentage of machine-mined coal to the total production increased in 1908, there being 5103 undercutting machines in use, against 4940 in 1907, and the percentage of machine-mined coal to the total increasing from 40.48 to 44.76. Of the machines in use in 1908 in the bituminous mines, 3427 were pick machines and 1607 chain-breast, the remainder being of other types.

In the production of bituminous coal alone Pennsylvania far outranks the other coal-producing States, the output in 1908 having been nearly 2½ times that of Illinois, which ranks second, and having exceeded the combined production of Illinois, West Virginia, and Ohio.

Pennsylvania alone produces more coal than any single foreign country except Great Britain. Pennsylvania's production of coal exceeds, in fact, the combined production of all foreign countries outside of Great Britain, Germany, and Austria-Hungary. Pennsylvania's output in 1908 was 3.8 times that of Austria-Hungary, 4.8 times that of France, and 7 times that of Russia, these being, respectively, fourth, fifth, and sixth among the coal-producing countries of the world.

The traffic department of the Chamber of Commerce, Pittsburgh, recently compiled figures showing the total river and rail tonnage of Pittsburgh for the years 1907-1908 in tons of 2240 lb. as follows:

	1907.	1908.
Rail .....	146,798,351	104,500,508
River .....	14,395,816	11,454,895
Total .....	161,194,167	115,955,403
Decrease in 1908.....		46,238,764

The Carbon Fuel & Iron Company, Denver, Colo., has been incorporated for the purpose of acquiring coal and iron lands in that State, but will probably not engage in the actual production of coal this year.

## OBITUARY.

CARL SPAETER.

The German iron industry lost one of its most conspicuous leaders through the death at Koblenz on July 9, of the head of the firm bearing the name of Carl Spaeter. Starting as a merchant, he became identified during the course of his career with many great industrial undertakings and was active in local and national developments. Born in 1835 at Stadtsulza, Sachsen-Welmar, he entered the employ of the house of Ludwig Wirth, forwarders and coal merchants at Koblenz, in 1856, and became a member of the firm in 1860. The style of the firm name was changed to Spaeter & Wirth in 1868, and through the purchase of the Wirth interest in 1875 the name was changed to Carl Spaeter. He put through the sale of the first lot of spiegeleisen to England in 1861, and developed mining enterprises in various parts of Germany and Austria. In 1879 Spaeter began mining manganese in the Kleinvatsch Valley in Styria, and then acquired the magnesia mines in the district, developing the famous magnesia mines and works known as Veltscher Magnesitwerke, whose products have been marketed in this country for many years. In 1871 Spaeter was one of the first, after the Franco-Prussian War, to acquire minette on property in the recently ceded Lorraine District, and finally, in 1887, began the building of the Rombach Works, which now consists of 11 blast furnaces and one of the largest steel works in Germany, employing 7000 men and capitalized at \$150,000,000. In recent years has was not active in the business which is being conducted by his son, Carl Spaeter, Jr., and his son-in-law, W. Oswald.

LOUIS PHILIP EWALD, Louisville, Ky., died July 31, aged 63 years. He had been in poor health for two years. He was born and reared in St. Louis. He received his early education in the public schools, and when a young man became connected with an iron foundry. He took a great interest in the manufacture of metal and made many experiments, resulting in his embarking in the rolling mill business. After many struggles he obtained sufficient money to start in business in a small way in St. Louis. He prospered, and a year later, in 1880, he removed to Kentucky, buying out the Tennessee Rolling Mills in Lyon County from D. Hillman & Sons. Under the management of Mr. Ewald the mills were successful, and in 1886 he removed to Louisville and bought the old Kentucky Rolling Mill, operating it and the Tennessee Mills under the name of the Ewald Iron Company, with himself as president. He had a very successful career as an iron manufacturer and gave liberally to local charities and worthy institutions. He leaves three children. His brothers, Howard and Harry, are prominent business men of St. Louis.

CHARLES C. SCHREIBER, vice-president and general manager of the L. Schreiber & Sons Company, Cincinnati and Norwood, Ohio, died at his home in Cincinnati August 7, aged 54 years. He was a member of the Manufacturers' Club and the Engineers' Club, and an honorary member of Cincinnati Chapter of the American Institute of Architects. He leaves a widow. His father, L. Schreiber, founder of the business, is still living.

ALBERT A. POPE, the pioneer bicycle manufacturer of the United States, who was also interested in the manufacturing of automobiles, died at his summer home at Cohasset, Mass., August 10, aged 66 years. He was born in Boston, forced to earn his living from boyhood, and at the age of 19 enlisted in the Union Army, serving with distinction and rising to the rank of Lieutenant-colonel. For several years after the war he sold shoe manufacturers' supplies. In 1877 he organized the Pope Mfg. Company to make small patented articles, and at the same time carefully considered the manufacture of bicycles. In the spring of 1878 the first order given in this country for the manufacture of bicycles was received by the Weed Sewing Machine Company, Hartford, Conn. Col. Pope soon controlled and finally bought out this concern. He began by manufacturing 50 machines dur-

ing the rest of the year and built up the business so that it employed a capital of \$2,000,000, utilized four factories, and, besides employing an army of workmen and expert machinists, gave employment to 3000 agents, who distributed the output throughout the country. The recent unfortunate experience of the Pope Mfg. Company is too well known to be recapitulated here. He leaves four sons and one daughter.

S. W. LAMOREUX, Beaver Dam, Wis., who died last week, had been prominent in the business life of Wisconsin for many years. From 1860 until about 1895 he was connected with the Northwestern Iron Company, Mayville, Wis. He was then instrumental in establishing the Beaver Dam Malleable Iron Company, of which he was president at the time of his death, and had held the office for over 10 years. He was further largely responsible for the starting of the Beaver Dam Malleable Iron Range Company, of which he was president and a director up to a recent period. At the time of his death he was president of the Careyville Coal Company, Careyville, Tenn.; was a holder of much iron ore property in the South, and was interested in the Beaver Dam Mfg. Company, maker of agricultural implements.

LORD MORTIMER COE, president of the Cleveland City Forge & Iron Company, which he founded in 1864, died at his home in Cleveland, August 2, of old age. He was born in Pen Yan, N. Y., in 1828. In early life he went to Buffalo and became an engineer on one of the first lake steamers. In a few years he was interested in a number of lake boats. In 1863 he sold his vessel interests and moved to Cleveland. He was a director of the Lehigh Valley Railroad and an officer of two Cleveland banks.

## PERSONAL.

Joseph Gallup, for many years superintendent of the Worth Brothers Company's open-hearth department at Coatesville, Pa., has resigned his position and for the present will take a well earned rest. He has been one of the most successful steel makers in the country, gaining his previous experience with the Carnegie Steel Company. When it was learned by the employees of the Worth Brothers Company that Mr. Gallup was to give up his position, they immediately provided a testimonial of their affection for him in the shape of a handsome watch and chain, the presentation being made by the chief melter, Mr. Evans.

It is announced by the South Bend Knife and Fork Club, which is composed of business men of South Bend, Ind., that Charles M. Schwab has accepted an invitation to address the club some time in November on the subject of "Business and Trade in the United States."

J. K. Keith recently resigned as manager of the Allis-Chalmers Company's saw mill department at West Allis, Wis.

David H. Cuyler, who recently resigned as New England manager of the Johnson Service Company, Milwaukee, will represent the F. W. Foster Mfg. Company, Boston, Mass., in the sale of steam specialties.

Charles M. Schwab, president of the Bethlehem Steel Company, spent July 30 in the inspection of the plant of the Dominion Iron & Steel Company at Sydney, Nova Scotia, paying particular attention to the duplex process of steel conversion as practiced there.

R. L. D. Mackie, formerly superintendent of construction for the Morgan Construction Company, Worcester, Mass., is now connected with the W. J. Scholl Company, Youngstown, Ohio, as manager of its high pressure and pipage department.

W. R. Lenard, until recently puddle boss at the Brown-Bonnell plant of the Republic Iron & Steel Company, Youngstown, Ohio, has been engaged as superintendent of the rolling mill at the Detroit Works of the American Car & Foundry Company.

H. E. Longwell of the Westinghouse Machine Company, East Pittsburgh, Pa., has been appointed consulting engineer, with particular jurisdiction over the publicity work of the company, and W. A. Bole has been



made assistant manager of works of the same company, with particular jurisdiction over the Trafford Works.

Walter Wood of R. D. Wood & Co., Philadelphia, Pa., went abroad last week. He is a delegate of the American Society for Testing Materials to the meeting of the International Association for Testing Materials at Copenhagen.

J. A. Gearhart has severed his connections with the Pennsylvania Railroad Company as material inspector in charge of the Pittsburgh District, to become a part of the organization of the Gulick-Henderson Company, Pittsburgh, as manager of its inspection department. He entered the employ of the Pennsylvania Railroad Company on leaving school, and previous to his services at Pittsburgh was in charge of material inspection at Philadelphia.

Herbert L. Beeler has been appointed to the newly created post of advertising manager and publicity representative of the R. K. Le Blond Machine Tool Company, Cincinnati. Mr. Beeler was identified for 11 years with the office management of the Cincinnati Bickford Tool Company, which has recently been merged with the Cincinnati Machine Tool Company under the name of the Cincinnati-Bickford Tool Company.

C. W. Wrenshall, superintendent of the Western Steel Car & Foundry Company, has accepted the general superintendency of the Pressed Steel Car Company, Pittsburgh. A. H. Hudson, assistant treasurer of the former company, will act until the appointment of a successor to Mr. Wrenshall.

T. G. Bush, Jr., general manager of the Coosa Pipe & Foundry Company and the Gadsden Pipe & Fittings Company, is expected to return to Birmingham, Ala., about September 1 after a two months' stay in the West.

## Trade Publications.

**Steel Sheet Piling.**—Lackawanna Steel Company, New York. Booklet, 31 pages. Contains some excellent views of cofferdams, caissons, dams, locks, &c., where steel sheet piling has been used. The construction of the piling is briefly explained, and among the views are some interesting pictures of the large cofferdam for the new Government ship lock in Black Rock Harbor, Niagara Falls, Buffalo, N. Y., which is 947 ft. long and 245 ft. wide.

**Boring Mill Attachments.**—Gisholt Machine Company, Madison, Wis. Page for loose leaf binder. Shows micrometer index dials for use on standard Gisholt boring mills, which are located at each end of the cross rails on the feed rods and directly measure all feeds. The dials read to 0.001 in., or 1-10 mm., as desired.

**Gas and Oil Furnaces.**—Chicago Flexible Shaft Company, La Salle avenue and Ontario street, Chicago, Ill. Catalogue, 6 x 9 in., 41 pages. Describes the use of the Stewart gas and oil burning furnaces, with burners adapted to different kinds of gas, in connection with the heat treatment of metals, such as the hardening of steels and reheating case hardening metal, milling, forging and other special purposes. Rivet furnaces, a pressure blower and its parts and pyrometers are also shown.

**Ore and Coal Handling Plants.**—Andresen-Evans Company, Monadnock Building, Chicago, Ill. Catalogue, 9 x 12 in. Shows several types of self-filling and dumping buckets, including clam-shell buckets, orange-peel buckets, grab buckets and conveying bridges. A line drawing and brief description of an unloading and storage plant is also shown.

**Elevating, Conveying and Concrete Machinery.**—Chain Belt Company, Park street and Eleventh avenue, Milwaukee, Wis. Catalogue No. 37, 6 x 9 1/4 in., 303 pages, cloth binding. Shows numerous types of conveying equipment, including installations of chain belt conveyors for pulp, wood storage systems, bucket systems for handling coal and package conveyors in shoe factories, barrel elevators in chemical plants, refuse conveyors, &c. Detachable chain belting, chain belt conveyors and other attachments, together with interlocking roller chain belt, &c., are shown and some space is given to chain belt concrete mixers of both portable and stationary types.

**Wire Rope.**—A. Leschen & Sons Rope Company, 920 North First street, St. Louis, Mo. Folder. Describes the erection of St. John's Cathedral in New York City, in the construction of which the company's wire rope is being used.

**Lubricating Systems.**—C. J. Van Doren Company, 53 Madison street, Chicago, Ill. Booklet and folder. The folder describes a lubricating device for bearings in which lubricating

grease instead of oil is used. The booklet contains testimonials from users.

**Concrete Mixers.**—United States Steel Mixer Company, Atwood Building, Chicago, Ill. Booklet. Describes a portable concrete mixer which is drawn by two horses and which operates while the vehicle is being drawn to the place where the concrete is used. The machine consists of two wheels, an axle and frame upon which is mounted two standards which carry and support the mixer and water tank. The mixer is of cubical shape and is revolved on a diagonal axis. The power is transmitted from two drive wheels which rest upon the ground to two gears mounted upon the wheel. These two gears engage two other gears, which are keyed to hollow journal bearings on the mixing cup. The machine can be thrown in and out of gear at the will of the driver.

**Trap Systems.**—American Blower Company, Detroit, Mich. Mailing card. Shows the Detroit trap system for boiler feed, water lift and coil drainage.

**Belt Shifter and Countershaft.**—The L. & D. Company, 88 Broad street, Boston, Mass. Circular. Describes a belt shifter with an oscillating lever to which a pull cord is attached, and which is mounted on a sliding shifter bar and is kept in position by a simple compression spring which also locks the shifter bar at each stroke. A countershaft arranged for its attachment is also shown, and prices are given. The shifter was described in *The Iron Age*, August 5, 1909.

**Asbestos Products.**—H. W. Johns-Manville Company, 100 William street, New York. Booklet and folder. The booklet shows three grades of asbestos brake band lining for automobiles, and the folder treats of asbestos products for use in the home, including a metallic compound to stop leaks in radiators, asbestos boiler covering, asbestos roofing, &c.

**Steam Turbines.**—E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y. Booklet. Contains an illustrated description of the construction and uses of the Bliss turbines which are made in sizes up to 1000-kw. capacity. The turbine was described in *The Iron Age*, July 29, 1909.

**Drop Hammers.**—Miner & Peck Mfg. Company, New Haven, Conn. Folder. Contains a brief description of the company's four and six-poppet standard drops, both of which were illustrated in *The Iron Age*, July 29, 1909.

**Water Purification.**—William B. Scaife & Sons Company, Pittsburgh, Pa. Pamphlet. A reprint of an article from *Industrial Engineering*, April 1, 1909, by J. C. William Greth, describing the use of feed water heaters as purifiers, in which reference is made to the equipment made by William B. Scaife & Sons Company.

**Speed Reducing Transmissions.**—D. O. James Mfg. Company, 1120 West Monroe street, Chicago, Ill. Catalogue D, 5 x 7 1/2 in., 112 pages. Speed reducing transmission gears (the O'Kelly patent) used in connection with gear cutter pumping equipment, motors, &c., are shown and various sizes and prices are listed. Space is given to rawhide gears, and the book contains much valuable information in the way of calculating speeds of pulleys, circumferences and areas of circles, rules for finding various dimensions, tables of strength of open hearth steel pins, &c. It is bound in flexible cloth and should be handy to engineers.

**Steam Hammers.**—McDougall & Potter Company, 606 West Fifty-fifth street, New York. Folder. Shows a 9-in. steam hammer and describes it briefly. The cylinder of this machine takes steam both ways, and is cushioned to prevent rebounding. The company also makes 6 in. and 12 in. hammers of the same type.

**Combined Punch and Shear.**—Clark Foundry Company, Rumford, Maine. Booklet. Shows a combined punch and shear for use in machine shops, railroad shops, &c. The machine occupies a floor space of 4 1/2 x 3 ft., weighs 3800 lb., and punches a 1 1/2-in. hole in 1/2-in. iron and cuts angle iron up to 4 in.

**Machine Tools.**—Garvin Machine Company, Spring and Varick streets, New York City. Catalogue E, 6 x 9 in., 92 pages. This edition of the company's publications is devoted particularly to turret machinery and tools. Standard screw machines, monitor lathes, double turret screw machines and screw machine tools and attachments are illustrated and described in English, French and German. Attachments used on the different machines are shown separately, and the book is well indexed.

**High Duty Turbine Pumps.**—Lea Equipment Company, 90 West street, New York. Folder. Shows a line of high duty turbine and volute pumps which are made for all services, such as water works, irrigation, reclamation, fire service, mining drainage, &c. A general description of the pumps is given, and several types of machines are shown, including three-stage turbine pumps, single-suction volute pumps, a four-stage pump connected with an alternating current motor, &c.

**Variable Speed Transmission.**—Variable Speed Clutch Company, Milwaukee, Wis. Circular. Calls attention to the air controlled variable speed transmission recently introduced by this company, describes its construction and operation and mentions its peculiar advantages. An illustrated description of this device appeared in *The Iron Age*, April 8, 1909.

## NEWS OF THE WORKS.

## Iron and Steel.

The sale of the Passaic Steel Works, Paterson, N. J., was not held July 31, the date set by the court for the plant to be sold, and it is likely that the sale will not be held until some time in October. At a previous sale the plant was purchased by former Mayor Lawrence Fagan of Hoboken for \$190,000, but upon application by the bondholders, who claimed that they did not have sufficient time to increase their bids and that the upset price was to be \$250,000, the sale was set aside by the court and July 31 fixed as the day for the plant to be resold. Mr. Fagan made application to the United States Circuit Court and secured a stay against the sale which was ordered for July 31. Numerous affidavits will be presented by the parties interested in October, and it appears as if the litigation over the sale of the works will be extended for some time.

Spang, Chalfant & Co., Inc., Pittsburgh, manufacturers of tubular goods, have started their new No. 3 lap weld furnace which will produce pipe from 4 to 8 in. The large No. 4 lap weld furnace, which is under construction, will also be completed shortly. This furnace will roll pipe up to 16 in. Spang, Chalfant & Co. throughout the past year have been making extensive improvements to their plant, which have given it considerably enlarged capacity.

The puddling department of the plant of Moorhead Brother & Co., Inc., at Pittsburgh, has been started up after a long idleness.

While the National Tube Company has completed the last welding furnace in its pipe mills at McKeesport, Pa., there is still a large amount of work to finish, such as the foundry, machine shop, coupling tap department, coupling forge department, &c. Workmen will likely be busy on these improvements until about July, 1910.

The blast furnace of the Thomas Furnace Company at Milwaukee, Wis., is expected to blow in in the latter part of August.

One of the furnaces of the Illinois Steel Company at Bay View, Wis., has been operating on malleable Bessemer and foundry irons.

The furnace of the Jefferson Iron Company, Jefferson, Texas, is expected to go in blast in the early part of September.

Sam Lanham blast furnace of the State of Texas, located at Rusk, Texas, is expected to go in blast about September 1. At the same time the manufacture of cast iron water pipe will be resumed at the State Penitentiary. Improvements have been made both at the blast furnace and the pipe foundry.

The Irondale Steel Company, Irondale, Wash., expects to blow in its blast furnace this month. The company is erecting two 25-ton basic open hearth steel furnaces and three trains of hot rolls. It is also building a plant for the manufacture of wrought iron and steel pipe and tubes. It expects to have its steel plant and rolling mill ready for operation in November. Coke will be used in the blast furnace and oil in the open hearth department.

Announcement is made by the Tennessee Coal, Iron & Railroad Company that the puddle mill at the Bessemer roll mill will be abandoned and that machinery for the manufacture of spikes and bolts will be installed. The company's steel plant at Ensley has been placed on double turn.

Repairs are being pushed on the relining of No. 2 furnace at the Thomas, Ala., plant of the Republic Iron & Steel Company. This stack will probably be ready for operation about October 1.

The Noble Electric Steel Company made a small quantity of low phosphorus pig iron in its electric furnace in Shasta County, Cal., in the first half of 1909.

The furnace of the Hamilton Steel & Iron Company, Ltd., Hamilton, Ont., which had been out for relining and repairs for some weeks, was blown in in the latter part of July.

The Canada Iron Corporation, Midland, Ont., has started work on a new furnace at Midland, which it hopes to have ready for operation in January, 1910. It will be 17½ x 75 ft., will be equipped with one Roberts and three Cowper-Whitwell stoves, and will have an annual capacity of 90,000 tons.

The Dominion Iron & Steel Company had three of its four furnaces at Sydney, Nova Scotia, running on June 30. The company is to start work on a fifth furnace in the last half of 1909.

The Algoma Steel Company, Ltd., operated continuously in the first half of 1909 its two furnaces at Sault Ste. Marie, Ont. Work is to be resumed this month on the company's No. 3 furnace, which was partly erected in 1901. The furnace will be 21 x 86 ft., and will have an annual capacity of 140,000 tons of Bessemer and basic pig iron.

## General Machinery.

The corporate title of the Olds Gas Power Company, Lansing, Mich., has been changed to Seager Engine Works. The officers of the company are James H. Seager, president; F. L. Smith,

vice-president; S. F. Seager, secretary and treasurer, and J. B. Seager, general manager. Coincident with this action the capital stock of the company was increased from \$612,000 to \$1,500,000, a step made necessary by the rapid extension of the company's business, which within a comparatively short time has been practically doubled.

A new roundhouse with emergency repair equipment, including light machine tools, will be built by the Great Northern Railroad at Marcus, Mont.

The new shop to be erected by the Ready Mfg. Company, Troy, N. Y., is to be built more to furnish additional room for its present equipment than for additional equipment to increase the capacity. The company will require very little new machinery for this addition, possibly a drill press, lathe and a small miller.

The G. W. Baker Machine Company, Wilmington, Del., manufacturer of hide and leather working machinery, is to erect a new machine shop to give more erecting room and to otherwise relieve the crowded condition of its present shop. No new machinery will be required.

The new shops of the Virginia & Rainy Lake Railroad, Virginia, Minn., are ready for the installation of machinery, nearly all of which, it is understood, has been purchased.

The Southern Railroad is building a small blacksmith shop at Citico, Tenn., to make repairs to frogs and switches and other roadway tools.

Fairbanks, Morse & Co. will take bids shortly on several additions to their works at Beloit, Wis., particulars of which can be gained by writing direct.

The Waterloo Drop Forge Company, recently organized, will build a plant at Waterloo, Iowa.

The A. C. Torbet Company has been incorporated at Hammond, Ind., with \$200,000 capital stock, to manufacture machinery and agricultural implements. The directors are A. A. Basse, L. E. Otte and N. S. Smyser.

The A. F. Oliver Mfg. Company, Buffalo, N. Y., general machinist and manufacturer of automobile specialties, is building a three-story brick addition to its factory on Cherry street.

The Chicago & Northwestern Railroad proposes to build a new dock for handling ore at Escanaba, Mich., and contract for clearing the site is understood to have been already let. The road is said to be preparing to make extensive additions to its repair equipment, including the erection of shops at Council Bluffs, Iowa.

A new rock crushing plant is being put in operation by the Pike River Granite Company, Marinette, Wis., and additional machinery will probably be required before another season opens.

The Lyons Boiler Company, De Pere, Wis., will extend its plant and install more machinery.

The Maxwell-Briscoe Company branch, 506 East Genesee street, Syracuse, N. Y., will soon start construction of a display room and automobile garage building, two stories and basement, 50 x 150 ft. A modern machine and repair shop will be maintained in connection with the garage.

## Foundries.

The Allyn Brass Foundry Company is having plans prepared by the Moore Engineering Company, Cleveland, for an aluminum factory, 350 x 350, two and three stories, which it will add to its plant at Detroit, Mich. The new building will be of brick and structural steel.

The Wallace Mfg. Company, Frankfort, Ind., has secured the contract to make the castings for the Pittsburgh Glass Company, amounting to about \$60,000 a year. It also makes the castings for the Cloverleaf Railroad, amounting to about \$25,000 a year. The company will build a larger foundry and machine shop.

The Syracuse Safe Company, Orange and Water streets, Syracuse, N. Y., has had new plans prepared and is again receiving bids for the construction of a new plant for the manufacture of safes, vault doors and linings, to be erected on Free street. The new plans call for a one and two story building, 50 x 300 ft., to be equipped as a combination foundry and machine shop, with electric traveling cranes, cupolas and various foundry and machine shop equipment. No power plant is to be installed and the equipment will be motor driven by the city current.

## Power Plant Equipment.

Specifications covering a new power plant for the Mitchell Motor Company, Racine, Wis., have been completed. It will be 50 x 150 ft., one story, of concrete and steel construction. The machinery to be installed will be determined upon as soon as contract for the building has been let.

A Corliss engine of about 500 hp. and an additional alternating current generator will be required in extending the capacity of the municipal electric light plant, Cullman, Ala.

The municipal electric light and power plant at Hastings, Neb., is to be enlarged during the fall or early winter.

The Antigo Electric Company, Antigo, Wis., has given the Nordberg Mfg. Company, Milwaukee, Wis., contract for the Corliss engine equipment of its new power house. It is understood



that the electric generators and auxiliary apparatus will be furnished by the Westinghouse Electric & Mfg. Company.

The McCartney Boiler Company, Bessemer, Ala., is being organized with a capital stock of \$50,000 to manufacture boilers, engines and other power plant equipment. The incorporators are James McCartney of Mobile, W. J. Long, G. H. Stevenson of G. H. Stevenson & Co., H. E. Bumby, Albert Ross and W. W. Hollingsworth of Bessemer, Ala.

Hydro-electric plants designed for an ultimate capacity of 80,000 hp. will be built on the Loup River by the Nebraska Power Company, Columbus, Neb.

The Packard Motor Car Company, Detroit, Mich., will erect two additions, each 50 x 144 ft., to its power building, of reinforced concrete and structural iron.

#### Bridges and Buildings.

The Standard Separator Company, which now occupies part of the Schwab foundry at Milwaukee, Wis., will erect a plant, 100 x 300 ft., at Waterloo, Iowa.

The Wausau Iron Works Company, Wausau, Wis., has the contract for three steel bridges to be built in that vicinity.

#### Fires.

The factory of the Flos Shade Roller Company at Ogdensburg, N. Y., was burned August 6, the loss being about \$30,000.

The plant of the Imperial Porcelain Works, Trenton, N. J., was damaged \$40,000 by fire August 8.

The tipples and a portion of the mining plant of the Alabama Consolidated Coal & Iron Company at Searles, Ala., were recently destroyed by fire. The loss is placed at \$50,000.

The plant of the Pettebone-Cataract Paper Company, Niagara Falls, N. Y., was damaged by fire August 6 to the extent of \$20,000.

#### Hardware.

The Whitman-Warren Screw Company, Detroit, Mich., capitalized at \$10,000, has been incorporated with the following officers: William H. Warren, president and treasurer; Charles A. Whitman, secretary and general manager; A. J. Spink, superintendent.

The Willis L. Pratt Company has been incorporated at Terre Haute, Ind., with \$10,000 capital stock, to manufacture churns. The directors are Willis L. Pratt, James W. Pratt and Millard Hunt.

The plant of the American Hardware Mfg. Company, Ottawa, Ill., was recently destroyed by fire, the loss being estimated at \$125,000. It has not been definitely decided whether the works will be rebuilt.

The Perfection Hanger Company, Indianapolis, Ind., has been incorporated, with \$50,000 capital stock. The directors are Willard W. Hubbard, Will H. Whittaker and Arthur E. Bradshaw.

The Parks Window Balance & Lock Corporation, Fargo, N. D., capitalized at \$100,000, has been organized to manufacture a line of hardware specialties which includes as its chief item a patent window balance and lock. The company is negotiating for a suitable site in a manufacturing center upon which to erect a factory for the manufacture of its product. The officers of the company are: President, Thomas Arnold; first vice-president, F. W. Parsons; second vice-president, C. M. Rhodes; secretary, A. C. Reinecke; treasurer, S. E. Parks, and counsel, Wm. Tillotson.

The Ideal Can Company has been organized at Indianapolis, Ind., and incorporated with \$250,000 capital stock. The directors are Linton A. Cox, H. F. Maranville, J. Dwight Palmer, H. J. Blackburn and J. W. Connaty. The company has purchased the machinery of the Akron Mfg. Company, Akron, Ohio, and will move it to Indianapolis. About 300 people will be employed in the plant.

The W. A. Whitney Mfg. Company, Rockford, Ill., reports an excellent export demand for its product, and during the past few months has sent large shipments of its portable hand metal punches to Paris, France, and Zurich, Switzerland, jobbing representatives.

The Pyrene Company has been incorporated at Indianapolis, Ind., with \$25,000 capital stock, to manufacture fire extinguishers. The directors are H. A. Luckey, N. C. Wheeler, A. W. Gemmer.

C. G. Barkley of Schenectady, N. Y., has lately purchased the patents and business of the Horton & Link Mfg. Company, Herkimer, N. Y. Mr. Barkley intends to build a plant at Schenectady for the manufacture of the Gem slicing machine, and will continue the marketing of this article under the style of the C. G. Barkley Mfg. Company.

The Hammond Paint Company, Benjamin Hammond, proprietor, Fishkill Landing, N. Y., has purchased a site at Beekman and Ferry streets and will start construction at once on a three-story factory building, 75 x 175 ft. The new plant will be devoted to the manufacture of paints.

The Rochester Can Company, Rochester, N. Y., will soon start construction of an additional factory building on Hague street. The building will be of brick and steel, semi-fireproof,

one story, 80 x 146 ft. The company is engaged in the manufacture of cans and tinware specialties.

The Liberty Cow Milker Company, Hammond, Ind., has been organized with \$20,000 capital stock, to manufacture a cow-milking machine. The directors are John E. Fitzgerald, Wm. G. Paxton, Otto Knoerzer and Theodore Umrath.

#### Miscellaneous.

The Velle Motor Vehicle Company, Moline, Ill., has increased its capital stock from \$150,000 to \$250,000, a step made necessary by the rapid enlargement of its business. The company has under construction a new factory building of reinforced concrete construction, which will, when completed, increase its present floor space a little more than two and one-half times. The new building will be four stories and basement, 80 x 420 ft., and will be ready for occupancy by October 1.

The Arthur Koppel Company, Pittsburgh, reports that its plant at Koppel, Beaver County, Pa., has recently considerably increased its operations and that it is running full at the present time. The company has some important contracts for Government work, including the navy yards, and for irrigation, steel mine cars, industrial railroad equipment, steel cars for rolling mills, &c. The Koppel Land Company, a subsidiary interest of the Arthur Koppel Company, is engaged in installing sewers and paving streets in Koppel, Pa. An artesian well furnishes clear water for the town. The company is also forming a building company for the erection of workmen's houses, of which it contemplates erecting between 25 to 50 in the near future.

The Curtin Perfect Combustion Company, Ogdensburg, N. Y., has been incorporated with a capital stock of \$50,000 to manufacture a special fire box, the invention of John Curtin, which can be used in connection with any tubular boiler. The fire box has a fire at each end, and is constructed so that the smoke and gases from the green fire pass over a superheated surface of the firebrick to and over the bright fire at the other end, returning through the flues to the chimney. This is done by a system of dampers and without forced draft. The object of the device is to eliminate complicated machinery and procure greater efficiency from the fuel. A boiler will be equipped with the fire box for demonstration before marketing the patent, the intention being to sell rights to manufacture the box. John M. Barr, 39 Ford street, Ogdensburg, is interested.

The High Wheel Auto Parts Company, Muncie, Ind., is building a large plant which will be equipped with modern machinery for the manufacture of rear axles, jack shafts and steering devices for automobiles, high wheel buggies, livery wagons, &c. The plant will be large enough to employ from 300 to 500 men.

Rhodes-Curry & Co., Amherst, N. S., manufacturers of railroad cars, axles, castings and forgings, are being reorganized, but about the only change that will be made in the business will be the taking over of the Amherst Malleable Iron Company business, which will be operated as a department of Rhodes-Curry & Co.

Bonds in the sum of \$18,000 have been voted by the town of Winnsboro, Texas, for the installation of a municipal water works system.

Arrangements are being made by the Segerstrom Plano Company, Minneapolis, Minn., to erect and equip a modern plano factory to cost from \$100,000 to \$125,000.

Work has been begun upon a new harvesting machinery plant to be built by the Idaho National Harvester Company, Moscow, Idaho. The buildings for these works will be completed in about 90 days, and the factory will have capacity for turning out a machine a day working one shift.

The contract for the erection of the coal washer plant for the Colorado Fuel & Iron Company, Strakville, Colo., has been let to Fox & Smith, general contractors, Florence, Colo.

The Michigan Pipe Company, Bay City, Mich., will make additions to its system of electric machine drive at constant speed.

Plans for a pumping plant and water system at Greenfield, Iowa, are being prepared by the Iowa Engineering Company, Clinton, Iowa.

A pumping plant and system of water distribution has been determined upon by the city of Carterville, Mo.

The Everett-Metzger-Flanders Company, Detroit, Mich., which recently purchased the plant of the De Luxe Automobile Company, has purchased the plant of the Western Malleable Steel & Forge Company adjoining the De Luxe property. This plant, originally devoted to the manufacture of malleable steel castings, has in the last three years gone largely into the manufacture of drop forgings, such as are used on automobiles. The plant has a capacity sufficient to supply all the forgings required by the Everett-Metzger-Flanders Company in the production of its automobiles. The company is planning to add departments so that eventually it will manufacture everything used in the construction of cars.

The Star Egg Carrier & Tray Mfg. Company, Rochester, N. Y., which is to build a new plant to consist of a main building, 40 x 180 ft., with wing 40 x 90 ft.; warehouse, 46 x 100 ft., and power house, 35 x 55 ft., does not contemplate in-

stalling any new machinery in the plant except some electric motors, although this has not been definitely decided.

The A. Weiskittel & Son Company, Baltimore, Md., manufacturer of enameled plumbers' goods, soil pipe, brass goods, &c., is enlarging its plant at Highlandtown by the erection of a two-story addition to the enameling department, 100 x 150 ft., providing room for 10 additional enameling furnaces, and a two-story office building, 75 x 100 ft. The company has just completed a new iron foundry at its Highlandtown plant, 175 x 380 ft., with several small additional buildings which are used for the manufacture of soil pipe and fittings. Many new patterns are being added to the company's lines of enameled ware, gas stoves, &c., and a considerable expansion in the business is contemplated.

The Schwartz Wheel Company, Philadelphia, Pa., has purchased the boiler plant on a plot, 113 x 497 ft., on Margaret street and the Pennsylvania Railroad tracks, which it is altering and improving by the erection of additional buildings at an expenditure of \$50,000. The plant will be fully equipped with modern machinery for the manufacture of automobile and heavy vehicle wheels and will have a capacity of about 100,000 sets.

The Marvel Motorcycle Company, Hammondsport, N. Y., has been incorporated with a capital stock of \$50,000 to take over the plant and manufacturing business of the Motorcycle Equipment & Supply Company. The new company was formed to secure additional capital to provide for taking care of the increased demand for motor cycles and supplies. A two-story addition to the plant, 30 x 115 ft. is being constructed. The company now has in process of manufacture 500 motor cycles. The Motorcycle Equipment Company has been formed to take over the supply end of the business. C. L. Waters is manager and C. P. Rudd superintendent.

The Connellsville Iron Works, Connellsville, Pa., builder of wood and steel mine cars and other mine equipment, steel plate work, &c., has recently received a contract from the Consolidated Connellsville Coke Company for an electric driven 7-ton refuse car, side dumping, for hauling slate, &c., to the dump. It is of steel construction and specially designed for this class of work, and when finished will be shipped to Gray's Landing, Pa. The Pittsburgh-Buffalo Company has also an order with this company for 100 steel mine cars of 6 tons capacity each, being larger than those in general service, for its new Marianna mine. The Connellsville Iron Works also has a contract from the Westmoreland Coal Company, Bentleyville, Pa., for an electrically driven leveler, pusher and loader for its new rectangular ovens. Westinghouse motors will furnish the power for operating this equipment. Three 10-ton larries are also being furnished this company. For the Tower Hill-Connellsville Coke Company, Tower Hill, Pa., the company is building two steel sprinkling tanks, each of 600 gal. capacity. These will be mounted on 18-in. wheels and used for sprinkling water in the mines, to lay the coal dust and overcome explosions.

The General Electric Company has awarded general contract to John J. Turner & Son, Amsterdam, N. Y., for the construction of a steel and concrete pattern storage building, five stories, 75 x 285 ft., to be erected in connection with the present plant at Schenectady, N. Y.

The New Process Galvanizing Company has been incorporated at Rochester, N. Y., with a capital of \$15,000, by Frank M. Harris and Murray B. Harris of Lowell, Mass., and Claire C. Barteman of Scottsburg, N. Y. The company will engage in a general galvanizing business.

William Person, Carl C. Machemer and Simon Seibert, fire commissioners of the city of Buffalo, N. Y., will receive bids on Monday, August 16, for furnishing the department with 25 miles of No. 10 B. & S. G. bare hard drawn copper wire and 40 miles of No. 10 B. & S. G. hard drawn triple braided copper wire. All wire is to be wound over an 18-in. drum and in ½-mile coils.

The Modern Engineering & Construction Company has been incorporated at Fort Wayne, Ind., with \$10,000 capital stock.

The Brookston Automobile Company has been incorporated at Brookston, Ind., with \$7000 capital stock, to manufacture automobiles. The directors are Milton Gay, J. H. Kneale, W. C. Holstead and John J. Nagle.

The Wood Electric & Mfg. Company, South Bend, Ind., has increased its capital stock from \$10,000 to \$30,000. William F. Wood is president.

The George L. Fish Electric Company has been incorporated at Lafayette, Ind., with \$25,000 capital stock, to manufacture electrical supplies. The directors are George L. Fish, John McHugh and W. F. Frey.

Kneller & Kaplan, Beloit, Wis., manufacturers of small vehicles, will build a plant at Monroe, Wis.

The Fred Sprinkman Company, Milwaukee, Wis., has contract for all of the pipe covering to be used in the new \$5,000,000 plant of the Corn Products Mfg. Company, Argo, Ill.

Esenwein & Johnson, architects, 777 Ellicott Square Building, Buffalo, N. Y., are receiving bids for three passenger elevators and one sidewalk freight elevator for the McArthur Department Building.

H. L. Hyatt, owner of the light plant at Jacksonville, Ind., is at the head of a new company, the Jasonville Heat & Light

Company, which will install a water works system and enlarge the lighting system so as to serve adjoining towns.

The Fairview Motor Company, Detroit, Mich., has awarded contract for the erection of its new automobile factory, 60 x 400 ft., three stories, of reinforced concrete construction, to be erected at Jefferson avenue and the Belt Line.

The Warner Engine Company has been incorporated at Muncie, Ind., with \$50,000 capital stock, to manufacture engines. The directors are Hugh L., John F. and Thomas W. Warner, E. W. Skillen and D. O. Skillen.

The Parry Auto Company, Indianapolis, Ind., recently organized with \$1,000,000 capital stock, has secured the buildings of the Standard Wheel Company, the plant of which was removed to Terre Haute. The directors are D. M. Parry, Maxwell O. Parry, Addison J. Parry, Warren D. Oakes, former superintendent of the Parry Mfg. Company, and Wm. C. Teasdale of St. Louis.

The Indianapolis Drop Forging Company, Indianapolis, Ind., has added \$10,000 to its capital stock. Walter Kessler is president.

The officers of the Cole Motor Car Company, recently organized at Indianapolis, Ind., with \$100,000 capital stock, are: President, J. J. Cole; vice-president, S. J. Kuqua; secretary, L. McCullough; treasurer, J. F. Morrison. The company has leased a large factory building at East Washington and Davidson streets and will also occupy, for its painting and trimming departments, part of the plant of the Cole Carriage Company at New York and Agnes streets. The "Cole Thirty," as the machine will be named, will be made in three styles, roadster at \$1400, demi-tonneau at \$1450 and touring car at \$1500. The company will make 1200 machines a year.

The Buffalo Brass & Copper Rolling Mill Company, Buffalo, N. Y., has the new addition, 144 x 176 ft., well under way, and expects to have completed and ready to begin operations next week. Until the present time the company has engaged exclusively in the manufacture of sheet and roll copper, but on completion of the addition will also engage in the manufacture of brass rods, brass wire, brass tubing and sheet brass.

**Bristol's Recording Instruments.**—The Bristol Company, Waterbury, Conn., has established a branch office at Pittsburgh, which is located in the Frick Building Annex. The company is making a specialty of studying the application of Bristol's recording instruments in many different industries; for instance, it has specialized in recording instruments for blast furnaces, including recording pressure gauges for hot blast, top gas and steam; electric pyrometers for hot blast temperatures, top gas temperatures and general tests; electric time recorders for recording the movements of rotary top, skip hoist, large bell, small bell and gauge rod; recording thermometers for Gayley dry blast temperatures, condenser water temperatures, feed water temperatures, &c. Besides the blast furnaces in the Pittsburgh District, there are many other processes in connection with which the use of Bristol's recording instruments has become very important. The managers of the company have studied the applications so carefully that they are now prepared not only to recommend and furnish the most suitable recording instruments but also to have their own representative superintend the installation of these in customers' plants.

After successful experiments with a 1-ton furnace a 3-ton electric furnace for steel making has been installed at the Friedenschütte, near Morgenroth, in Upper Silesia, the works belonging to the Eisenbahnbedarf, A.-G. The furnace is the Nathusius furnace of the Westdeutsche Thomas Phosphatwerke of Berlin. It is a combined arc and resistance furnace, and the metal and its slag can be heated both from the top and from the bottom.

The July report of the Iron Founders' Society, which is the molders' union of Great Britain, showed that 5420 members, or nearly 30 per cent., were "on the funds," an increase of 151 over the previous month. The total membership is 18,701. The cash balance was £37,109, a decrease of about £40,000 from the previous year. Trade reports indicate that conditions are not improving, but are rather worse.

A large new producer of ferrosilicon is to start in Switzerland in November. It is the Gotthard works at Bodio Kanton Tessin, which has available 30,000 hp. developed by the Biaschina. The concern is outside of the Paris ferrosilicon pool.



## The Iron and Metal Trades

### Pig Iron Active in the Central West.

#### A Large Inquiry for Rails for Next Year.

Interest in the pig iron markets has been shifting toward the Central West lately, although the week has been eventful, too, in the East. While the reports that steelmakers in the Pittsburgh and Youngstown districts have bought some large blocks of Valley iron are exaggerated, some important sales have been made and others are under negotiation. There has been a broadening of the markets throughout the territory west of the Alleghenies and east of the Mississippi in foundry and malleable irons, and probably a considerably larger business would be going were it not for the fact that many sellers have been advancing their prices rather rapidly, particularly for deliveries during the next year. Blocks of Southern foundry iron in merchants' hands have been coming out at \$12.50, Birmingham, from week to week and each of them is heralded as the last.

For delivery during this year additional business has been done in basic pig in eastern Pennsylvania, and the demand does not seem to be quite satisfied, although the price has been advanced to \$17.50, delivered. For next year higher prices are being asked by sellers. There has been a heavy demand for forge iron and a good run of business for foundry iron, on which widely varying quotations are made.

There has been some buying of Scotch and Middleborough warrants by American merchants abroad, partly on the chance that better prices here may encourage an advance there and partly to be in a position to import iron. Scotch iron is offered here c.i.f. at 60 shillings, which, with the new duty, would be equivalent to a shade under \$17.25. Even taking into account the preferences of buyers for American brands and the additions to parity which must be made by the importers, this is not far from the point at which foreign iron could be profitably sold at New England points.

Nothing of consequence has been done in ferromanganese, which owing to the lowering in the duty is now available at \$40 to \$41, Baltimore. Ferrosilicon is up to the extent of the greater part of the added duty, which figures out about \$9 to \$10 per ton.

A somewhat significant incident in the steel rail trade is the fact that one system has appeared in the market with an inquiry for 60,000 tons for delivery during 1910. Winter work would be welcomed by the mills, chiefly because it would equalize the probably heavy demands next summer upon the blast furnace capacity. During the week the Baltimore & Ohio has purchased about 20,000 tons, the Chicago Great Western 10,000 tons, the Burlington 5000 tons, and the Atlantic Coast line 3500 tons.

New orders for plates are pouring in to the mills from the car builders, who are receiving orders for cars in liberal numbers.

New contracts for structural material have not been large or significant during the week.

The pressure upon the coke producers is causing some uneasiness to the furnaces. It is mainly a question of securing the needed labor for rapidly resuming operations. A leading interest has bought about 20,000 tons a month for delivery during the balance of the year, largely as a hedge.

The establishment of a system of co-operation among Eastern steel mills, by which purchases of melting scrap are made through one firm of merchants, has aroused opposition in the scrap trade. Efforts are being made to get the railroads to co-operate in withholding scrap from the market. It is stated that foreign crop ends are being offered at \$17.50, ex ship.

The interpretations widely put on the returns of the Copper Producers' Association are rather too rosy. The deliveries to domestic consumers in July, aggregating 75,500,000 lb., are very good and indicate that consumers are not alone using more but are also stocking up. But we have no satisfactory evidence that Europe can stand export deliveries at the rate of 75,000,000 lb. long. We have little confidence in the foreign statistics of visible supplies and doubt whether consumption there has really expanded much.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

Aug. 11, Aug. 4, July 14, Aug. 12,  
1909. 1909. 1909. 1908.

FIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia .....	\$17.00	\$16.75	\$16.50	\$16.50
Foundry No. 2, Southern, Cincinnati .....	16.25	16.25	15.75	15.25
Foundry No. 2, local, Chicago ..	17.00	17.00	17.00	17.35
Basic, delivered eastern Pa. ....	17.00	16.50	15.50	15.00
Basic, Valley furnace .....	15.25	15.25	15.00	14.75
Bessemer, Pittsburgh .....	16.90	16.90	16.40	16.30
Gray forge, Pittsburgh .....	15.15	14.90	14.90	14.65
Lake Superior charcoal, Chicago	19.50	19.50	19.50	19.50

BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh ..	24.00	24.00	23.00	25.00
Forging billets, Pittsburgh .....	28.00	28.00	27.00	27.00
Open hearth billets, Philadelphia	27.00	27.00	25.00	26.20
Wire rods, Pittsburgh .....	31.00	31.00	29.00	33.00
Steel rails, heavy, at mill .....	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago ..	16.00	15.25	14.50	14.25
Steel rails, melting, Philadelphia	17.00	16.50	16.00	14.50
Iron rails, Chicago .....	18.50	17.50	17.00	16.50
Iron rails, Philadelphia .....	19.75	19.50	19.50	19.00
Car wheels, Chicago .....	16.00	16.00	16.00	15.50
Car wheels, Philadelphia .....	15.50	15.00	14.75	14.50
Heavy steel scrap, Pittsburgh ..	16.00	16.00	15.75	15.00
Heavy steel scrap, Chicago .....	14.75	14.75	14.00	13.00
Heavy steel scrap, Philadelphia	17.00	16.50	16.00	14.50

FINISHED IRON AND STEEL,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia ..	1.45	1.45	1.45	1.40
Common iron bars, Chicago .....	1.37½	1.37½	1.35	1.50
Common iron bars, Pittsburgh ..	1.45	1.45	1.45	1.40
Steel bars, tidewater, New York	1.46	1.46	1.41	1.56
Steel bars, Pittsburgh .....	1.30	1.30	1.25	1.40
Tank plates, tidewater, New York	1.56	1.56	1.51	1.76
Tank plates, Pittsburgh .....	1.40	1.40	1.35	1.60
Beams, tidewater, New York .....	1.56	1.56	1.51	1.76
Beams, Pittsburgh .....	1.40	1.40	1.35	1.60
Angles, tidewater, New York .....	1.56	1.56	1.51	1.76
Angles, Pittsburgh .....	1.40	1.40	1.35	1.60
Skelp, grooved steel, Pittsburgh ..	1.35	1.35	1.30	1.45
Skelp, sheared steel, Pittsburgh ..	1.45	1.45	1.40	1.50

SHEETS, NAILS AND WIRE,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.50
Wire nails, Pittsburgh .....	1.80	1.80	1.70	1.95
Cut nails, Pittsburgh .....	1.75	1.75	1.70	1.75
Barb wire, galv., Pittsburgh .....	2.10	2.10	2.00	2.40

METALS, Per Pound:				
Cents.	Cents.	Cents.	Cents.	Cents.
Lake copper, New York .....	13.62½	13.50	13.12½	14.00
Electrolytic copper, New York ..	13.25	13.00	13.00	13.85
Spelter, New York .....	5.75	5.60	5.35	4.75
Spelter, St. Louis .....	5.60	5.45	5.27½	4.62½
Lead, New York .....	4.30	4.35	4.35	4.60
Lead, St. Louis .....	4.45	4.20	4.25	4.45
Tin, New York .....	29.85	29.50	28.90	30.50
Antimony, Hallett, New York ..	8.12½	7.50	7.50	8.00
Nickel, New York .....	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York ..	\$3.64	\$3.64	\$3.64	\$3.89

\* These prices are for largest lots to jobbers.

## Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 20c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steels and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Structural Shapes.**—I-beams and channels, 3 to 15 in., inclusive, 1.40c., net; I-beams over 15 in., 1.50c., net; H-beams over 8 in., 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.45c., net; angles, over 6 in., 1.50c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.60c., base, half extras, steel bar card; tees, 3 in. and up, 1.50c., net; tees, 3 in. and up, 1.45c., net; angles, channels and tees, under 3 in., 1.35c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.65c., net; hand rail tees, 2.75c., net; checkered and corrugated plates, 2.75c., net.

**Plates.**—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.40c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered  $\frac{1}{4}$ -in. plate. Steel plates over 72 in. wide must be ordered  $\frac{1}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under $\frac{1}{4}$ -in. to and including 3-16-in. plates on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete circles.....	.20
Roller and flange steel plates.....	.10
"A. B. M. A." and ordinary firebox steel plates.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Shell grade of steel is abandoned.....	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

**Sheets.**—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, No. 10 and heavier, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 2.05c.; box annealed sheets, Nos. 17 to 21, 2c.; Nos. 22 to 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c.; Galvanized sheets, Nos. 13 and 14, 2.25c.; Nos. 15 and 16, 2.35c.; Nos. 17 to 21, 2.50c.; Nos. 22 to 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3.05c.; No. 28, 3.25c.; No. 29, 3.25c.; No. 30, 3.60c. Painted roofing sheets, No. 28, 1.55c. per square. Galvanized roofing sheets, No. 28, 2.80c. per square for  $2\frac{1}{2}$ -in. corrugations.

**Wrought Pipe.**—Discounts on steel pipe,  $\frac{3}{4}$  to 6 in., in carloads to the largest trade, are 81 and 5 per cent. off list, and on iron pipe,  $\frac{3}{4}$  to 6 in., are 77 and 5 per cent. off list.

**Boiler Tubes.**—Regular discounts are as follows:

Boiler Tubes.	Steel.
1 to $1\frac{1}{2}$ in.....	.50
$1\frac{1}{2}$ to $2\frac{1}{4}$ in.....	.62
$2\frac{1}{4}$ to 5 in.....	.70
$2\frac{1}{2}$ in.....	.64
6 to 13 in.....	.62
$2\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.	
$2\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.	

**Wire Rods.**—Bessemer, open hearth and chain rods, \$31.

**Steel Rivets.**—Structural rivets, 1.70c., base; boiler rivets, 1.80c., base.

## Chicago.

FISHER BUILDING, August 11, 1909.—(By Telegraph.)

Following the heavy offerings of specifications in June and July against contracts for finished materials, it was feared that a sharp let up in demand would occur, but from the results shown in the reports for the first week in August such apprehensions were needless. In fact, instead of catching up in deliveries on steel bars, plates and shapes, the mills are falling further behind, congestion of a most pronounced character existing in these lines. In addition to a well sustained run of specifications new orders for steel bars amounting to 13,000 tons were entered by the leading interest, a large share being supplied by the car shops. New contracts for 4500 all steel and steel underframe freight cars have been placed, and further orders of like character are pending. The railroads are crowding the mills for deliveries of track material and are coming into the market for large quantities of fastenings. The Illinois Steel Company has booked orders this year for 40,000 tons of tie plates, and there is an inquiry now in the market for 15,000 tons. New rail purchases aggregating 8000 tons have been added to the bookings for delivery this year by the same company, which has but little open capacity for Bessemer rails prior to January 1. New building projects continue to develop, which are expected to call for a large tonnage in structural shapes. Deliveries of structural shapes are badly retarded by the inability of the mills to keep step with demand. Trial passes were made last week on the new billet mill at Gary, which will likely be able to commence regular rollings of 4 x 4 in. billets by August 15. Scrap prices have reached a level that is proving attractive to dealers who have been holding large quantities of material for a rise, but the strong tone of the market operates against a general letting go at this time. Aside from the unsatisfactory extension of mill deliveries, market conditions seem to justify the very optimistic feeling that prevails regarding the future course of events in the iron and steel industry.

**Pig Iron.**—So far as actual sales are concerned, the pig iron market is quiet and without incident of special interest. Prospectively, however, the situation is most encouraging, inasmuch as there are abundant evidences of increasing

consumption and a firmer feeling all along the line. Doubt as to the ability of consumers to take the iron bought for delivery during the third quarter has been dispelled by the generally prompt acceptance of shipments as scheduled and the request in many cases for the anticipation of deliveries. Furnace men are now of the opinion that considerable buying will be necessary to take care of melters' fourth quarter requirements. Transactions of the past week have been closely confined to small orders ranging from 200 to 500 tons. A local melter took 1000 tons of Northern iron for last half delivery. Inquiries for first quarter and half requirements are coming out in greater number, but the furnace interests, both North and South, are backward about naming prices for this period. Those that are quoting usually name figures that buyers will not consider. There is no longer any Southern iron being offered at \$12.50, Birmingham, for any delivery, the market being absolutely firm at \$13, with some sellers asking \$13.50, though so far as known no sales have been made at the latter figure. Northern iron is more generally held at \$17, at furnace, but \$16.50 has not been finally withdrawn by all sellers. One Northern interest has temporarily withdrawn from the market on last half business by naming a price of \$18, Chicago. Since their advance to \$15, at furnace, the southern Ohio producers are no longer a factor in this market. The following quotations are for August and September delivery, f.o.b. Chicago:

Lake Superior charcoal.....	\$19.50 to \$20.00
Northern coke foundry, No. 1.....	17.00 to 18.00
Northern coke foundry, No. 2.....	17.00 to 17.50
Northern coke foundry, No. 3.....	16.50 to 17.00
Northern Scotch, No. 1.....	18.00 to 18.50
Southern coke, No. 1.....	17.85 to 18.35
Southern coke, No. 2.....	17.35 to 17.85
Southern coke, No. 3.....	16.85 to 17.35
Southern coke, No. 4.....	16.35 to 16.85
Southern coke, No. 1 soft.....	17.85 to 18.35
Southern coke, No. 2 soft.....	17.35 to 17.85
Southern gray forge.....	15.85 to 16.35
Southern mottled.....	15.60 to 16.10
Malleable Bessemer.....	17.00 to 17.50
Standard Bessemer.....	18.40 to 18.90
Jackson Co. and Kentucky silvery, 6 %.....	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8 %.....	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10 %.....	21.90 to 22.40

By Mail.

**Billets and Rods.**—With none of the producers in this district offering any in the open markets, consumers of forging billets are obliged to look to other sources for their supply. This being the case, \$31 base, Chicago, represents the best figure obtainable on forging billets from outside mills. The largest consumers in this market are pretty well covered by contracts, against which they are specifying liberally. The quantity of wire rods being booked at the new prices is comparatively light, but specifications against contracts placed before the advance are heavy.

**Rails and Track Supplies.**—Though not coming in in large lots, some rail orders are being entered; those booked by the Illinois Steel Company last week totaled 8000 tons, of which 5000 tons of open hearth rails, placed by the Chicago, Burlington & Quincy, will be rolled at Gary. It is understood that of the 20,000 tons comprising the original inquiry of this road only 10,000 tons will be purchased. The remaining 3000 tons was made up of miscellaneous orders from small steam roads and traction lines, in which was specified 1800 tons of 60-lb. rails. The No. 2 light rail mill at the South Works, though primarily designed for lighter sections, is now running in part on 60-lb. rails, thus relieving the No. 1 mill and facilitating deliveries. The railroads are pressing for deliveries on all kinds of material and are especially in need of track supplies. Specifications for the latter, comprising bolts, spikes and tie plates, are piling up at a rapid rate in spite of the fact that the mills turning out these lines are running full. The extent of requirements in such supplies is indicated by an inquiry now in the market for 15,000 tons of tie plates. The demand for light rails is only fair. Prices remain unchanged, but are absolutely firm at the following quotations: 40 to 45 lb. sections, \$26; 30 to 35 lb. sections, \$26.75; 16, 20 and 25 lb. sections, \$27; 12-lb. sections, \$28, Chicago, less 50c. a ton on lots of 500 tons and \$1 a ton on lots over 500 tons.

**Structural Material.**—While no large contracts were let last week, a multitude of small orders were received which made a considerable aggregate. An addition to the Congress Hotel, Chicago, calling for 100 tons, was taken by the Kenwood Bridge Company. Specifications for the new Pullman shops have been increased from 7000 to 9000 tons, and it is likely that a contract for the fabrication of this material will be let within a few days. No new orders are reported from the railroads, but specifications on bridge material are being supplied to the leading interest at a rate of 4000 to 5000 tons a week. Considering the fact that nearly all fabricating shops are filled up for a considerable time, it is rather surprising that prices do not recover more rapidly. Counting from the extreme low point established during the late decline, values have risen perhaps \$8 a ton, which, in view of existing conditions, is regarded as short of what they should be. Deliveries on new orders range from Sep-



tember to December, the earlier date being promised when the material is supplied from stock. The mills are making no headway in catching up on orders, but are in most cases falling further behind. Prices remain at 1.58c., base, Chicago, at which figure they are absolutely firm.

**Sheets.**—Aside from the strengthening influence of growing demand, recent advances in spelter have aided in the stiffening of prices on galvanized sheets. These, as well as black sheets in both light and heavy gauges, are being firmly held at current quotations and the difficulty of getting anything like satisfactory deliveries from the leading mills is becoming more and more pronounced. Orders are being entered by the Inland Steel Company faster than the mill is able to turn them out, and shipment on new orders is not being promised inside of six weeks at the earliest. For immediate requirements buyers are turning to jobbers' stocks, which are moving rapidly at full prices.

**Plates.**—Orders have been placed by the Chicago & Northwestern for 1500 steel gondola cars and by the Chicago, Burlington & Quincy for 2000 drop bottom steel coal cars with the Pressed Steel Car Company; the New York Central Lines have ordered from the Standard Steel Car Company 1000 steel underframe cars, which is in addition to a contract for a like number placed some time ago. Material for the 1000 steel underframes, amounting to 7000 tons, will be rolled by the Illinois Steel Company. Specifications for plates from the car shops are accumulating rapidly, and the tonnage derived from bridge and building structures is also large. There is no evidence of unsteadiness in prices, which are firmly established at 1.58c., base, Chicago. Jobbers report a heavy demand for store shipments, which, as delivery from mills continues to lengthen out, is likely to increase.

**Bars.**—The record breaking specifications for steel bars in July do not seem to have satisfied the requirements of consumers, since they still continue to come in at a good rate. It is hardly likely that as much tonnage will be entered this month as in July, but at that business is being offered faster than the mills are able to take care of it. Consumers are placing a fair run of new orders, as is indicated by the bookings of the Illinois Steel Company, which, for the first week in August, amounted to 13,000 tons. All of the independent mills are filled with work and are running behind on deliveries from six to eight weeks. The demand for bar iron has increased until all of the Western mills have specifications in hand to keep them going full time. Increased activity in car shops is one of the principal causes of betterment in the demand for iron as well as steel bars. Soft steel bars are not being offered by any mill at less than 1.48c., Chicago, and some independent mills are asking \$1 a ton more. From 1.35c. to 1.40c. is asked for hard steel bars, and the absolute minimum for iron bars is 1.37½c., Chicago, with some business going at 1.40c. to 1.45c.

**Merchant Pipe.**—Notwithstanding the widely published report of an impending advance on merchant pipe, the demand from jobbers has not been appreciably quickened. Orders continue to come in usual volume, representing the running requirements of the trade. Although the mills of the leading interest, as well as those of the independent producers, are well filled up, shipments are reasonably prompt, conditions in this respect being satisfactory.

**Boiler Tubes.**—There is a little better demand for locomotive tubes for repair work, but these as well as merchant tubes are moving slowly. These lines, in fact, constitute the quietest department in finished lines.

**Cast Iron Pipe.**—An award of 2000 tons was made by the city of Cleveland to the United States Cast Iron Pipe & Foundry Company. This was the only transaction of considerable size reported last week. A number of small municipal lettings, together with a satisfactory run of routine orders, was placed. Orders for culvert pipe from various railroads, amounting to 1000 tons, were taken by the leading interest. We quote per net ton, Chicago, as follows: Water pipe, 4-in., \$27.50; 6 to 12 in., \$26.50; 16-in. and up, \$25.50, with \$1 extra for gas pipe.

**Metals.**—There is a fair amount of inquiry for copper and the demand for small lots for immediate requirements is considerably improved. Few of the larger consumers are in the market, most of them being pretty well supplied. Casting copper is firm, and producers of this grade are not crowding for business. On lake, however, prices have a wider range than for some time. Spelter has advanced, though it does not appear that there has been any notable increase in the movement of this metal. Sheet zinc prices have been marked up 25c., and tin is in better demand and firmer. Quotations are as follows: Casting copper, 13¼c.; lake, 13½c. to 13¾c., in car lots, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots, 31c.; small lots, 33c.; lead, desilverized, 4.40c. to 4.50c., for 50-ton lots; corroding, 4.65c. to 4.75c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; spelter, 5.65c. to 5.70c.; Cookson's antimony, 10¼c., and other grades, 9¾c. to 10¼c.; sheet zinc is \$7.25, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13¼c.; copper bottoms, 11¼c.; copper clips, 12¼c.; red brass, 11¼c.; yellow brass,

9¼c.; light brass, 6¼c.; lead pipe, 4½c.; zinc, 4.50c.; pewter, No. 1, 23c.; tin foil, 25c.; block tin pipe, 27c.

**Old Material.**—The entrance of the Pullman Company in the market as a buyer of old iron rails, iron angles and splice bars and railroad wrought caused an immediate tightening up of these lines. The bar mill of this interest has been started after a long period of inactivity, thus adding another channel of consumption in the local market. Other bar mills in this district have been buying steadily for several weeks, during which time they have all accumulated stock enough to run them for three months. Most of them seem to have reached a point where further purchases are not absolutely necessary just now, and are consequently not taking any more at top prices. A large local consumer of melting steel is reported to have rounded up something like 60,000 tons of this material, and other buyers have been quietly adding to their stocks as occasion offered. Prices have reached a point where many holders of scrap are able to unload and take their profits and a good deal of hoarded material has been coming out of late. Dealers generally, however, are strongly optimistic as to the future and expect prices to advance to a still higher level. Prices on the leading iron grades have advanced sharply.

Old iron rails.....	\$18.50 to \$19.00
Old steel rails, rerolling.....	16.00 to 16.50
Old steel rails, less than 8 ft.....	16.00 to 16.50
Relaying rails, standard sections, sub-	
ject to inspection.....	22.50 to 23.50
Old car wheels.....	16.00 to 16.50
Heavy melting steel scrap.....	14.75 to 15.25
Frogs, switches and guards, cut apart.....	14.75 to 15.25
Shoveling steel.....	13.75 to 14.25

The following quotations are per net ton:

Iron angles and splice bars.....	\$17.00 to \$17.50
Iron car axles.....	19.50 to 20.00
Steel car axles.....	18.00 to 18.50
No. 1 railroad wrought.....	14.00 to 14.50
No. 2 railroad wrought.....	13.50 to 14.00
Springs, knuckles and couplers.....	14.00 to 14.50
Locomotive tires, smooth.....	14.50 to 15.00
No. 1 dealers' forge.....	12.00 to 12.50
Steel axle turnings.....	10.25 to 10.75
Machine shop turnings.....	8.50 to 9.00
Cast and mixed borings.....	5.75 to 6.25
No. 1 busheling.....	11.50 to 12.00
No. 2 busheling.....	9.25 to 10.25
No. 1 boilers, cut to sheets and rings.....	11.00 to 11.50
No. 1 cast scrap.....	14.00 to 14.50
Stove plate and light cast scrap.....	11.75 to 12.25
Railroad malleable.....	13.50 to 14.00
Agricultural malleable.....	12.00 to 12.50
Pipes and flues.....	10.75 to 11.25

## Birmingham.

BIRMINGHAM, ALA., August 9, 1909.

**Pig Iron.**—For such lots as are in demand, which in the majority of cases involve prompt shipments only, the schedule of \$13, Birmingham, on a No. 2 foundry basis is no doubt the lowest figure considered by any sellers. A basis of \$13.50, Birmingham, is believed to be the lowest price available for last quarter deliveries, and the indifference manifested by all producers as to such commitments is marked. The inquiries for 1910 quotations are more numerous and have taken more definite form, but in no case has a quotation on such requirements been established and the attitude of sellers hardly affords an idea as to just when order books will be open for commitments that far advanced. As has been the case for some weeks past, melters are apparently unwilling to pay the advanced price for such additional last quarter requirements as are necessitated until those requirements become more urgent. The theory that last quarter requirements have been provided for to some extent through engagements for earlier shipment is substantiated by the unusual movement from furnace yards resulting from the manifested indifference of producers as to the delivery of tonnage past due. It is noted that even in cases where the yard space is practically taken up deferred shipments have been ordered out, and where storage room is plentiful producers are in some instances being asked to anticipate shipments. The actual melt has increased materially since August 1, and a very encouraging feature in that connection is the fact that in some important lines a fairly satisfactory advance in the selling price has been effected recently. A conservative estimate places the available stocks on furnace yards at 35,000 to 40,000 tons, or a decrease of some 20,000 tons during the month of July. No figures are available as to the tonnage on foundries' yards, or as to the aggregate tonnage in hands of merchants.

**Cast Iron Pipe.**—There are as yet no reports of important lettings to be held in the near future. A contract for some 2000 tons of water pipe for the city of Cleveland, Ohio, is understood to have been placed the past week, but the business secured by local interests is composed largely of considerably smaller lots. The views of local producers as to prices is unchanged, although the tonnage booked at much lower figures than are now being asked is in all cases sufficient for some months' operations. Cast iron soil pipe manufacturers claim an advance of \$2 per ton in the price of their product and are principally interested in delivering

previous sales. We quote water pipe nominally as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$26; 8 to 12 in., \$25; over 12-in., average \$24, with \$1 per ton extra for gas pipe.

**Old Material.**—Dealers' quotations are revised upward, and contracts entered during the past week are satisfactory. Indications are favorable for the resumption of operations at the Sheffield Rolling Mill, and with the operations of the Southern Iron & Steel Company it is believed that a further advance than recently effected will soon be realized. We quote dealers' asking prices, which are firm, at the following per gross ton, f.o.b. cars here:

Old iron rails.....	\$14.50 to \$15.00
Old iron axles.....	15.00 to 15.50
Old steel axles.....	12.00 to 12.50
No. 1 railroad wrought.....	12.50 to 13.00
No. 2 railroad wrought.....	10.50 to 11.00
No. 1 country wrought.....	9.50 to 10.00
No. 2 country wrought.....	9.00 to 9.50
No. 1 machinery.....	11.00 to 11.50
Tram car wheels.....	10.50 to 11.00
Standard car wheels.....	12.00 to 12.50
Light cast and stove plate.....	10.00 to 10.50
No. 1 steel.....	10.50 to 11.00
Cast borings.....	5.00 to 5.50

## Philadelphia.

PHILADELPHIA, PA., August 10, 1909.

The tone of the market is strong and a further advance in some prices is noted. Finished materials show a steady forward movement, with prices on a more even basis. Most sellers show no disposition to force business, and many of them have their capacities, as far as the near future is concerned, pretty well taken. The increased activity of the railroads as buyers of motive power and rolling stock is encouraging. The most important order recently placed here was for 57 locomotives for the Hill lines, taken by the Baldwin Locomotive Works. Consumers of both crude and finished materials are steadily increasing consumption and are urging deliveries, and instances have occurred of delays from unexpected sources forcing buyers in the market for prompt materials, resulting in marked increases in prices for prompt deliveries.

**Pig Iron.**—The market in this territory is in a particularly perplexing position. Sellers are practically sold up, as far as deliveries in the near future are concerned, and spot iron is comparatively scarce. Many buyers underestimated their requirements, and have come into the market for iron for early deliveries, prices for which show considerable variation, dependent on the conditions. Basic iron for prompt shipment is particularly scarce, producers in this territory being practically sold up for the third quarter, and few have any tonnage to offer for fourth quarter delivery, a number being much behind. No further tonnage for shipment in the first quarter of 1910 has been placed, and while \$17 is still the nominal quotation, some sellers ask \$1 advance for such delivery. Basic for early delivery commands a higher price than that recently paid for extended delivery; transactions have been light, but one sale of several thousand tons, which cleaned up the seller's available tonnage, is reported at \$17.50, delivered. While the situation in foundry iron is not so acute, there is also a scarcity of some brands for early delivery, and prices show a considerable range, dependent on sellers' position. Inquiries continue quite numerous, and while the bulk has been for small and moderate prompt lots, some few round tonnages for extended delivery are reported. Numerous sellers are out of the market for extended delivery, refusing to quote for shipment beyond October 1. Standard brands of No. 2 X foundry command \$17 to \$17.50, with occasional sales at a somewhat higher level. A number of sellers have advanced prices for fourth quarter delivery from 25c. to 50c. a ton above those for prompt shipment, but very few, if any, are yet disposed to make quotations for early 1910 delivery. Virginia foundry grades have been somewhat more freely taken, although practically all the transactions have been in small lots for prompt shipment. Prices are a shade higher, prompt No. 2 X now commanding \$17 to \$17.50, delivered, and while some sellers refuse to quote for fourth quarters others name \$18, delivered, as their price for that grade. While no heavy sales of forge iron are noted, prices have moved upward about 25c. a ton, and at the higher level this grade is scarce; standard brands now easily command \$16 to \$16.25, delivered. Low-grade irons for cast iron pipe making are still in considerable demand, but little Northern iron appears to be available. A somewhat better demand for low phosphorus iron is reported, and prices, while unchanged, are firmer. Sales of several moderate lots have been made at prices ranging from \$20 to \$20.50, delivered. As producers are not able to take care of the demand, additional capacity will likely be made available. In fact, the Warwick Iron & Steel Company has decided to blow in its third stack as early as possible. Quotations on nearly all grades of pig iron are higher, and the range is wider. The following quotations represent about the average for prompt delivery in buyers' yards, eastern Pennsylvania and nearby points, with fourth quarter delivery, commanding a slight advance, but basic quoted nominally:

Eastern Pennsylvania, No. 2 X foundry.....	\$17.00 to \$17.50
Eastern Pennsylvania, No. 2 plain.....	16.50 to 17.00
Virginia, No. 2 X foundry.....	17.00 to 17.50
Virginia, No. 2 plain.....	16.50 to 17.00
Gray forge.....	16.00 to 16.25
Basic.....	17.00
Low Phosphorus.....	20.00 to 20.50

**Ferromanganese.**—Very little demand is noted. Quotations are somewhat uncertain, owing to the reduction of the import duty, and the market has not been seriously tested on the new basis. Prices, therefore, are largely nominal, ranging from \$40 to \$41, Baltimore, for delivery over the rest of the year.

**Billets.**—There is a good inquiry for moderate sized tonnages, but sellers show no disposition to load up with contracts at the present price level. The bulk of the orders placed are small and for reasonably prompt shipment. Prices are firm. Ordinary rolling steel commands \$27, delivered in this territory, with forging steel, which has been quite actively sold, quoted at \$29, the usual extras applying for high carbons and special sizes.

**Plates.**—Makers continue to book a large volume of business. Some mills are running at full capacity, with others closely approaching normal. There has been a steady influx of orders, confined, however, to no particular class of material, although that for bridge and car work still predominates. Individual orders are increasing in size, and consumers would willingly contract for extended requirements, but mills still refuse to accept such business. Prices are very firm, and while the bulk of the tonnage placed has been at 1.55c. minimum for carload lots, delivered, some mills ask and obtain 1.60c. minimum for business of a miscellaneous character.

**Structural Material.**—The volume of business coming out is quite large. A few fair sized individual contracts running upward of 1000 tons have been taken, but most orders are small. Mills are fully engaged and deliveries on some classes of material are in some instances slightly delayed. Prices are strong and firmly maintained at 1.55c. to 1.65c., delivered, dependent on specification and quantity.

**Sheets.**—Current business continues of a prompt nature at unchanged prices. Mills are running at practically full capacity, and orders are accumulating on sellers' books. Prices for prompt shipment are unchanged, although advances are frequently obtained for extended delivery. The following range of prices is named for delivery in this territory: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.

**Bars.**—There has been a somewhat better demand, and producers feel more encouraged with the outlook. Tonnages of orders placed are also somewhat heavier, although mills to a large extent still refuse to accept orders for extended delivery at ruling quotations. For reasonably prompt shipment refined iron bars for delivery in this territory are quoted at 1.45c. to 1.50c. Steel bars have not been particularly active, 1.45c., delivered, being the ruling quotation.

**Coke.**—The prospect of an increasing consumption of furnace coke has stiffened the price of that grade, and some fairly good lots have been placed at about \$1.75, at oven. Foundry coke has not been very active, sales being usually of small lots at unchanged prices. For delivery in this territory the following range of prices is named:

Connellsville furnace coke.....	\$3.90 to \$4.10
Foundry coke.....	4.35 to 4.50
Mountain furnace coke.....	3.50 to 3.70
Foundry coke.....	3.80 to 4.10

**Old Material.**—The market shows increasing strength. The plan by which a number of Eastern steel mills will purchase their requirements of heavy melting steel, as well as other grades of old material, through one merchant, still lacks official confirmation, but is no doubt being tried out. Considerable opposition on the part of the dealers outside the arrangement has developed, and a meeting of those interested was held in this city on the 7th instant, but without any definite action being taken. The plan has no doubt brought about a higher range of asking prices for some classes of material, and the outcome of the movement is awaited with considerable interest. Sellers now hold heavy melting steel firmly at \$17 to \$17.50, delivered, and sales, if made, are being well covered. Foreign steel crop ends have been offered at \$17.50, ex ship Philadelphia, but we can learn of no sale. For delivery in buyers' yards, eastern Pennsylvania and nearby points, the following range of quotations is nominally named:

No. 1 steel scrap and crops.....	\$17.00 to \$17.50
Low phosphorus.....	20.00 to 21.00
Old steel axles.....	22.00 to 23.00
Old iron axles.....	24.00 to 25.00
Old iron rails.....	19.75 to 20.50
Old car wheels.....	15.50 to 16.00
Choice No. 1 R. R. wrought.....	18.50 to 19.00
Machinery cast.....	15.50 to 16.00
Railroad malleable.....	15.00 to 15.50
Wrought iron pipe.....	16.00 to 16.50
No. 1 forge fire scrap.....	14.00 to 14.50
No. 2 light iron.....	9.50 to 10.00
Wrought turnings.....	13.50 to 14.00
Stove plate.....	13.00 to 13.50
Cast borings.....	11.25 to 11.50
Grate bars.....	14.00 to 14.50



## Pittsburgh.

PARK BUILDING, August 11, 1909.—(By Telegraph.)

**Pig Iron.**—Reports of large sales of Bessemer and basic iron have been circulated that are incorrect. The only sales of Bessemer actually made are 15,000 tons by W. P. Snyder & Co. to the Republic Iron & Steel Company for August and September, and about 10,000 by the Bessemer Pig Iron Association to the Youngstown Sheet & Tube Company for delivery balance of the year. This company is negotiating an additional 5000. The Republic is to repay the final portion of iron it borrowed recently from the Youngstown Sheet & Tube. These sales were made at \$16, Valley, and the market is very firm at that price. The Jones & Laughlin Steel Company has been in the market for 15,000 to 25,000 tons of Bessemer iron, but has not closed. The Standard Steel Car Company has inquired for 100,000 tons of basic for delivery over next year, to be used in the steel plant it has just broken ground for. It has received several propositions along different lines which are being carefully considered, but action may not be taken for some time. Basic is very firm at \$15.25, Valley, for any delivery this year, while furnaces would not sell for next year except at a marked advance. Conditions in the foundry iron market are very peculiar, sales being made at wide ranges, and consumers closing without putting out general inquiries. No. 2 foundry cannot be had at under \$15.25, Valley, but this price can be done through this year, while odd sales have been made at \$15.50. One or two western Pennsylvania furnaces not in the Valley have made sales this week at \$15, at furnace. Foundry iron buyers appear more optimistic than the furnaces, and it is distinctly a seller's market. We quote No. 2 foundry at \$15.25, Valley. This week one sale of 2000 tons of forge was made at \$14.25, Valley, and one sale of 1000 tons at \$14.75, Valley, which represents a peculiar condition, and we quote the market at this range.

**Steel.**—The market is not active and occasional sales are usually for prompt delivery. We quote billets very firm at \$24 for Bessemer and \$25 for open hearth, with sheet bars \$25.50 to \$26, all f.o.b. Pittsburgh, plus freight to destination, but would note that as high as \$26 has been obtained for small lots of basic billets for immediate shipment. Forging billets are \$28 minimum.

(By Mail.)

The general tone of the iron and steel market continues to show improvement. There has been a distinctly advancing tendency in pig iron in the past 10 days, while there have been fairly large sales of steel making pig iron, with additional inquiry in the market. In finished steel there are no particularly large orders, but there is an excellent run of small business, which is giving the mills a larger amount of new tonnage than they expected in this midsummer season. Specifications on old contracts continue very large. The trade now expects that a fresh large buying movement will set in late in the year, say, in November, which will easily carry them along at the heavy rate of production already reached. Mill deliveries have been steadily falling behind, particularly in bars, plates and shapes, and this is causing inconvenience in some quarters. In finished steel the tone is very firm all along the line, and on a number of products some mills are quoting above the market as a means of shutting off the demand. Most of the trade expected an advance in steel pipe the beginning of this month, and while nothing definite is known it is the general belief that an advance of one or two points will be made in the not distant future. The inquiry of the Standard Steel Car Company for 100,000 tons of basic pig iron for delivery in the first half of next year is of particular interest. The Thos. D. West Foundry Company, Sharpsville, Pa., has bought the Alice Furnace, near its plant, from the Youngstown Sheet & Tube Company, possession to be given a year hence. This will give the foundry company a large portion of the iron it uses, while the seller will be able to employ the funds, on occasion, on blast furnace erection at Youngstown, thereby concentrating its operations and saving the freight on pig iron from Sharpsville to Youngstown, at the same time getting the advantage of using hot metal.

**Ferromanganese.**—The market has regained the greater part of the reduction in the duty from \$4 to \$2.50, being firm at \$41, Baltimore, for early delivery, against \$41.50 a week ago. We quote \$41, Baltimore, for early delivery, \$41.50 for fourth quarter and \$42 for the early part of next year, the freight to Pittsburgh being \$1.95.

**Ferrosilicon.**—There is considerable irregularity in prices quoted since the new duty went into effect, this being 20 per cent. on ferrosilicon containing more than 15 per cent. silicon, and \$5 a ton on ferrosilicon containing less than 15 per cent. silicon, the former duty having been \$4 a ton on all grades. Sales of 50 per cent. ferrosilicon have been made this week at about \$63.50, Pittsburgh, while carloads are quoted at \$64 to \$65. On the blast furnace product regular quotations, delivered, Pittsburgh, are about \$25 for 10 per cent., \$26 for 11 per cent. and \$27 for 12 per cent.

**Muck Bar.**—The market is firm, all pig muck bar being quoted at \$28 to \$28.50, Pittsburgh.

**Skelp.**—There is an active demand and prices are firmly

maintained. We quote grooved steel skelp at 1.35c. to 1.40c.; sheared, 1.45c. to 1.50c.; grooved iron, 1.55c. to 1.60c., and sheared iron skelp, 1.60c. to 1.65c., all for ordinary widths and gauges, f.o.b. Pittsburgh.

**Spelter.**—The market has been advancing steadily in the past fortnight and is fairly active. We note a sale today of 75 tons of prime Western spelter at 5.82½c., delivered Pittsburgh, for shipment this month, and quote the market at that figure.

**Steel Rails.**—The local rail plant is running to better advantage than at any time since 1907, and continues to receive good specifications on old contracts. Splice bars are 1.50c., Pittsburgh. We quote standard sections at \$28, at mill, and light rails as follows: 8 to 10 lb., \$34; 12 and 14 lb., \$29; 16, 20 and 25 lb., \$28; 30 and 35 lb., \$27.75, and 40 and 45 lb., \$27, f.o.b., Pittsburgh. One leading maker of light rails, located outside the Pittsburgh District, is quoting about \$1 a ton higher than these prices, but equalizes freights with Pittsburgh.

**Plates.**—There is a good run of small plate orders and specifications are excellent on old contracts. None of the mills will quote under 1.40c. on plates, and the market is expected to work up to about 1.50c. before the next heavy contracting period. We quote plates at 1.40c. to 1.45c., depending on the order, for ¼ in. and heavier, Pittsburgh.

**Structural Material.**—Structural business in the past week has been confined to small orders. The fabricating shops are running as well as they can, but are experiencing some difficulty on account of slower deliveries by the mills. Recently they could get deliveries in three weeks, while 8 to 10 weeks are required now, and in this transitional period the shop work is falling behind, the burden being on the drafting departments to get more material under specification. Last week the American Bridge Company shipped two 14-car transfer barges to J. W. Thompson, St. Louis, general contractor for ballasting several hundred miles of the Illinois Central. Mr. Thompson has a gravel island in the lower Mississippi. The barges involve 400 tons of steel each. The company is now starting work on three bulk oil barges for the Teche Transportation & Fuel Oil Company, operating in the lower Mississippi. These will be the first steel bulk oil barges used in inland transportation. We quote beams and channels at 1.40c. for 15-in. and under on regular orders, and 1.45c. on small orders.

**Bars.**—Specifications continue heavy for steel bars, while a large number of small orders are being booked. Prices are very firm, 1.30c., Pittsburgh, being the minimum, while some producers quote 1.35c. The regular mills are all very well filled with orders, and one interest which usually does little in soft steel bars is receiving a great deal of business at good prices. Iron bars are firmer in price, and 1.45c., Pittsburgh, is done only on attractive business for early delivery, 1.50c. being quoted on less desirable orders and for delivery farther ahead.

**Tin Plate.**—The American Sheet & Tin Plate Company is running more mills at the Elwood, Ind., and New Castle and Sharon, Pa., plants than at any time since the walkout of the Amalgamated Association June 30. The demand for tin plate is very heavy, considering the time of year, as there is usually little new summer business after July 1. The independents are all running full. The market is very firm at \$3.40, Pittsburgh, for 100-lb. cokes.

**Sheets.**—The sheet market shows still more firmness, and the prices, which were more or less nominal at one time, are now quite strictly adhered to, at 2.20c. for No. 28 black and 3.25c. for No. 28 galvanized, Pittsburgh. There is still a little shading in corrugated material, but not a great deal. The regular quotations are \$1.55 per square for painted and \$2.80 per square for galvanized.

**Hoops and Bands.**—There is a fair demand for hoops and bands, and prices are well maintained. The regular quotation on hoops is 1.50c., and this figure is shaded only in very exceptional cases. Bands are 1.30c.

**Shafting.**—The demand for shafting has improved, and prices are maintained better than was the case a month or two ago. We quote cold rolled shafting at 60 per cent. off in carloads and 55 per cent. off in less than carloads, delivered in base territory.

**Spikes.**—Railroads are specifying freely on spike contracts, and some new business is being placed. Prices are firm. We quote \$1.65 for railroad spikes, 4½ x 9-16 in. and larger, and for smaller sizes and boat spikes \$1.70, base, subject to standard card extras, with an advance of 5 per cent. in less than carload lots.

**Merchant Pipe.**—The trade is looking for an advance in merchant pipe, although the general expectation was that any advance to be made would be announced August 2. The mills are well sold up for several months, and on some sizes to the end of the year. The official discounts on black steel pipe ¾ to 6 in. are 81 and 5 and on iron pipe ¾ to 6 in. 77 and 5 in carload and larger lots to the largest trade.

**Boiler Tubes.**—The demand for boiler tubes has improved, but there is still some shading of the regular discounts.

**Coke.**—The coke market remains firm, not being affected by the general impression that the proposed merger of H

coke properties will not be put through in any form. We quote standard Connellsville furnace coke for prompt shipment at \$1.65 to \$1.70 per net ton at oven, and on contract at \$1.70 to \$1.75, 72-hour foundry coke being \$1.90 to \$2 for prompt and \$2 to \$2.40 for contract. The week's output in the Connellsville and lower Connellsville region is reported at 385,000 net tons, the same as in the week previous.

**Iron and Steel Scrap.**—The market has been very quiet, as consumers feel that scrap is being so tightly held that to bid for it now would advance prices and would bring out only a very limited tonnage. They expect prices to be higher, but believe that by waiting they will be able to obtain larger tonnages at the advance. The railroad material is being absorbed very quietly, and there is little scrap going in the market. The market is quotable as follows per gross ton: Heavy steel scrap for Monessen, Sharon, Follansbee, Leechburg, Steubenville and in the Pittsburgh District, \$16; cast iron borings, \$9.50 to \$9.75; bundled sheet scrap, \$14.75, delivered at consuming point; No. 1 cast scrap, \$15.25 to \$15.75; No. 2, \$14.50 to \$14.75; No. 1 railroad malleable scrap, \$15; grate bars, \$12.25 to \$12.75; No. 1 busheling scrap, \$14.50 to \$15; No. 2, \$10.75 to \$11; low phosphorus melting stock, 0.04 and under, \$19.50 to \$20.50; locomotive tires, \$18; locomotive axles, \$26 to \$26.50; machine shop turnings, \$11.50 to \$11.75; rerolling rails, delivered at Columbus, Ohio, \$16.75; old car wheels, \$16.25 to \$16.50; iron axles, \$24.50 to \$25; stove plate, \$11 to \$11.50; steel axles, \$20 to \$20.50; sheet bar crop ends, \$16.50. All above prices are f.o.b. cars, Pittsburgh, unless otherwise stated.

## St. Louis.

ST. LOUIS, MO., August 9, 1909.

The freight movement of St. Louis for the first half of 1909 aggregated 29,162,029 tons, according to a report completed recently. This is an increase of 1,891,997 tons, or 10.35 per cent. over the traffic of the corresponding period of 1908. As there is no doubt that the business of the second half of the year will indicate a still further improvement, the freight tonnage bids fair to approach that of 1907, the record year. According to the report of the State Bank Commissioner, the resources of all banking institutions reporting amount to \$738,204,585, an increase of \$62,495,158 for the year. All parties identified with the iron business report a gradual broadening of the revival in trade, and regard the outlook as decidedly encouraging. It is noteworthy that concerns depending largely upon railroads speak more hopefully than at any time for a year and a half, while now, as heretofore, the best demand is coming from parties engaged either in manufacturing or jobbing iron, implements and supplies for farmers and the country trade generally.

**Coke.**—The principal sales agency report a firm but rather quiet market, so far as sales of importance are concerned, but there is some increase in inquiry. One broker mentions, among other inquiries, an application for a price on smelter coke for shipment over one year at the rate of 125 tons per week. For the most part, sales are confined to small lots for prompt shipment, though these sales, and also inquiries for like quantities, are quite numerous. While a strengthening tendency is noted, the various houses report the market unchanged from last week. We quote standard 72-hr. Connellsville for prompt shipment or delivery over the remainder of the year, \$2.25, at oven; for shipment over one year, \$2.35; for first half, 1910, \$2.50 is asked.

**Pig Iron.**—Apparently a greater degree of expectancy prevails regarding a further appreciation in the price of pig iron on the part of sellers, and in case of producers, as reflected by the views of their agents, than is the case with consumers, judging by the somewhat limited inquiry for round lots. This is accounted for partly by the free buying of the past three months and the quite considerable advance in the market must be taken into account. There is, however, a fair amount of inquiry and a reasonably active market mostly, as regards sales, for small lots, the orders coming as noted last week from St. Louis territory. In the aggregate, some offices are doing a good business, one house reporting sales of 3500 tons of Northern iron of special analysis, with, however, not much inquiry for Southern except in small lots. Mention is made by one sales agency of an inquiry for 10,000 tons of charcoal iron. We hear of an inquiry for 1000 tons of Southern iron for shipment over the last quarter of 1909 and first quarter of 1910. It is also reported that a company is still in the market for 3000 to 4000 tons of basic iron, and there is an inquiry for 2000 tons of Southern iron. A sale is reported for delivery extending over one year beginning with August, shipment of 100 tons each quarter. We fail to find any price named for 1910 shipment, and quote the market as practically unchanged from last week. The fact that a leading interest has instructed its St. Louis representative to hold Southern

No. 2 foundry at \$13.50 for last half strengthens the position of other offices in quoting that figure, yet it is still admitted that a firm offer of \$13 might be entertained. In the absence of knowledge of a lower price, we quote \$13.50 as the market for No. 2 Southern foundry, Birmingham, for shipment over the balance of the year.

**Lead, Spelter, Etc.**—The market for lead is strong at 4.20c., East St. Louis; special brands higher. Spelter has advanced, and is firm at 5.62½c. to 5.65c. Zinc ore is higher, and held at \$46 per ton, Joplin, base, with an advancing tendency. Tin is easier; antimony unchanged; copper unchanged. The demand for finished metals is brisker.

**Old Materials.**—The improvement in the demand from mills for steel scrap noted last week is still more in evidence, with also some additional interest being manifested on the part of foundries. The views of leading dealers are very firm, without, so far as can be learned, any further advance in prices except for car wheels. At all the offices a confident feeling prevails, and an increased demand from consumers is regarded as practically certain to occur in the near future. There are no railroad lists reported for the week. We quote dealers' prices, per gross ton, f.o.b. St. Louis, as follows:

Old iron rails.....	\$15.50 to \$16.00
Old steel rails, rerolling.....	15.00 to 15.50
Old steel rails, less than 3 ft.....	14.50 to 15.00
Rerolling rails, standard sections, subject to inspection.....	24.00 to 24.50
Old car wheels.....	16.50 to 17.00
Heavy melting steel scrap.....	14.50 to 15.00
Frogs, switches and guards, cut apart..	14.50 to 15.00

The following quotations are per net ton:

Iron fish plates.....	\$13.25 to \$14.25
Iron car axles.....	19.00 to 19.50
No. 1 railroad wrought.....	14.00 to 14.50
No. 2 railroad wrought.....	13.00 to 13.50
Railway springs.....	13.00 to 13.50
Locomotive tires, smooth.....	13.50 to 14.00
No. 1 dealers' forge.....	10.00 to 10.50
Mixed borings.....	6.50 to 7.00
No. 1 boilers, cut to sheets and rings..	9.50 to 10.00
No. 1 cast scrap.....	13.00 to 13.50
Stove plate and light cast scrap.....	9.50 to 10.00
Railroad malleable.....	12.50 to 13.00
Agricultural malleable.....	11.50 to 12.00
Pipes and flues.....	10.00 to 10.50
Railroad sheet scrap.....	8.50 to 9.00
Railroad grate bars.....	10.00 to 10.50
Machine shop turnings.....	8.00 to 8.50

B. H. V. Johnson, formerly connected with the Scullin-Gallagher Iron & Steel Company, is now the vice-president of the Commonwealth Steel Company.

The Central Foundry Company, Webb City, Mo., owing to the increased demand for its products, has been obliged to enlarge its plant. The plans and specifications contemplate doubling the capacity.

The Scullin-Gallagher Iron & Steel Company reports enlarged inquiry and orders for miscellaneous work. The demand from railroads in this section shows a marked increase.

Reports from Galena, Kan., and Joplin, Mo., state that the ore production for the week will be somewhat below the average, with a marked increase in competition among buyers, which leads producers to look for an advancing market for zinc ore. The surplus in the entire district is about 4000 tons.

## Buffalo.

BUFFALO, N. Y., August 10, 1909.

**Pig Iron.**—The market shows a fair degree of activity for territory tributary to Buffalo furnaces, with considerable new business coming in at the advanced prices, both for foundry grades and malleable, principally in carload to 500-ton lots, for prompt delivery. Quite an aggregate of business is also being received from Pennsylvania and New England points. The demand for basic is strong, at stiffening prices, and there is a growing demand for high silicons. Furnaces are still reluctant to contract for 1910 business, and are asking a material advance. In some instances consumers are paying the advance asked in order to insure the securing of desirable brands and the covering of their contracts. So far, however, comparatively little business is being booked for deliveries beyond this year. Prices for current and fourth quarter deliveries, f.o.b. Buffalo, are as follows:

No. 1 X foundry.....	\$16.00 to \$16.50
No. 2 X foundry.....	15.75 to 16.25
No. 2 plain.....	15.25 to 15.75
No. 3 foundry.....	15.00 to 15.25
Gray forge.....	14.75 to 15.00
Malleable Bessemer.....	15.50 to 16.00
Basic.....	16.25 to 16.75
Charcoal.....	19.50 to 20.00

**Finished Iron and Steel.**—All agencies and mills report a continuance of heavy specifications against contracts. Some, however, report new business quieter, many consumers being covered until November 1 and some mills not quoting for delivery beyond that date. One independent interest last



week advanced the price of steel bars to 1.35c., Pittsburgh, and another did the same this week; also advancing structural plates to 1.45c., Pittsburgh. Inquiries and orders for railroad material are being received in increasing number, one interest reporting an inquiry for 300 tons of spikes. The leading interest reports the demand for structural material active in New York State and Canada, and inquiries for a number of new building projects involving considerable tonnages are being considered. Prices are firming up steadily, although considerable tonnages of plain shapes have been taken in the open market during the week at 1.40c., Pittsburgh. The Buffalo Structural Steel Company has been awarded contract on revised bids for fabricating and erecting the steel for the Men's Hotel to be erected by the Buffalo Y. M. C. A., 400 tons, the steel to be furnished by the Lackawanna Steel Company.

**Old Material.**—The market is strong in all lines, although there is only a limited inquiry from consumers in this district. Most of the larger mills are pretty well supplied for the present with what they are receiving on old contracts. Dealers are still expecting heavy buying a little later and stocks not required for filling contracts are being held for higher prices. Current prices are firm, but not materially higher than last week. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel scrap.....	\$15.00 to \$15.50
Low phosphorus steel scrap.....	18.75 to 19.25
No. 1 railroad wrought.....	16.00 to 16.25
No. 1 railroad and machinery cast scrap..	14.75 to 15.00
Old steel axles.....	19.00 to 19.50
Old iron axles.....	21.75 to 22.25
Old car wheels.....	15.00 to 15.50
Railroad malleable.....	14.50 to 15.00
Boiler plate.....	13.00 to 13.50
Locomotive grate bars.....	12.00 to 12.50
Pipe.....	12.25 to 12.75
Wrought iron and soft steel turnings..	9.00 to 9.50
Clean cast iron borings.....	7.50 to 8.00
No. 1 bushelling scrap.....	13.00 to 13.50

## Cleveland.

CLEVELAND, OHIO, August 10, 1909.

**Iron Ore.**—The market has been quite active and the week's sales amount to a good round tonnage. One furnace interest bought 140,000 tons, divided among three or four ore firms; several other good sized sales are reported. The continued activity in the iron and steel trade that has resulted in the blowing in of additional blast furnaces, with the expectation that others will be started up later in the season, has stimulated the ore market, and several furnace interests that bought ore conservatively two months ago are now in the market for more. The shipments for July were the second largest in the history of the trade. The movement down the lakes was 6,693,025 tons, which was only 113,785 tons behind the record breaking month of August, 1907, when the total shipments were 6,806,810 tons. If the shipments in the last week of the month had not fallen off heavily because of floods and washouts that interfered with mining operations and the rail movement from the mines, the July shipments would have broken the former record. Very heavy shipments are now being made, and unless something unexpected happens the August movement will pass the 7,000,000-ton mark and set a new record. The total shipments up to August 1 were 15,395,350 tons, as compared with 7,235,000 tons in the same period last year. The movement up to August 1, 1907, the record breaking year, was 17,534,741 tons, the total movement by water that year being 41,288,755 tons. Ore men are now confident that the movement this season will exceed 38,000,000 tons, and many think that it will nearly reach 40,000,000 tons. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—Prices on foundry iron are higher. An improvement in the demand that resulted in a good volume of orders in the past few days has been followed by an advance of 25 to 50 cents a ton. No. 2 foundry is now held firmly at \$15.50 to \$15.75, Valley furnace, for the balance of the year, and \$16 for the first quarter of next year. A local furnace took on some first quarter tonnage at \$15.50 for No. 2 and then advanced its price to \$16, at which a few sales were made. This interest has now withdrawn all quotations and is asking \$16.50 at furnace for the last quarter of this year and the first quarter of 1910. With the expectation that prices will soon be squarely on a higher basis some furnace interests are willing to take on only a small tonnage for delivery after the first of the year and others are staying out of the market by quoting prices higher than those at which sales are now being made. A good volume of foundry iron inquiries for 200 to 500 tons is pending from this district and from surrounding territory and many consumers appear anxious to cover for a portion of their first quarter and first half requirements. There is an improvement in the demand for Southern iron, a few inquiries being out for 100 to 500 tons, and \$13, Birmingham, is being quoted as the minimum price. There is a fair volume of inquiries for basic and malleable iron,

among the latter one for 5000 tons. For the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer.....	\$16.90
Northern foundry, No. 1.....	\$16.50 to 17.00
Northern foundry, No. 2.....	16.00 to 16.50
Northern foundry, No. 3.....	15.50 to 16.00
Southern foundry, No. 2.....	17.35 to 17.85
Gray forge.....	15.00 to 15.50
Jackson County silvery, 8 per cent. silicon.....	20.05

**Coke.**—The market is rather quiet, and prices remain about stationary, although some producers have advanced their quotations. We quote standard Connellsville furnace coke at \$1.65 to \$1.70 per net ton, at oven, for spot shipment, and \$1.80 to \$1.90 for delivery over the balance of the year. Standard 72-hr. foundry coke is held at \$2 for spot shipment and \$2.15 to \$2.50 on contract.

**Finished Iron and Steel.**—Specifications on contracts are very heavy, nearly all the mill agencies reporting an increase during the week. Mills are getting further behind on deliveries and the best shipment now promised on steel bars is six weeks. One mill agency reports that it can make structural shipments in four weeks, but others can make less prompt shipments. Consumers are experiencing considerable inconvenience because they are unable to secure shipments of material needed for work under way, and many expecting that present conditions will continue for some time are anticipating their requirements as much as possible and are getting in specifications for delivery four or five months ahead. Because of the heavy tonnage on its books the leading interest has adopted the policy of avoiding as much as possible orders for less than carload lots of steel bars, plates and structural material. This applies to mill orders from jobbers as well as orders direct from the consumers. The carrying out of this policy is expected to increase the warehouse business of jobbers. A fair volume of new business in steel bars is coming out at present prices, 1.30c., Pittsburgh, being the minimum, but carload lot sales are reported at 1.35c. Local manufacturing plants and structural shops are figuring on work that in the aggregate will require a large tonnage, on the material for which they have secured protection from the mills at present prices. The contract for the grandstand for the Cleveland Baseball Park has been awarded to the Forest City Steel & Iron Company, Cleveland. Th plain material, 1000 tons, will be furnished by the Jones & Laughlin Steel Company. The demand for plates continues good and a large number of specifications are coming from the boiler and tank shops in this district, which are well filled with work. The demand for iron bars, while not heavy, shows an improvement. A fair volume of orders is coming from the car builders. Prices remain stationary at 1.40c. to 1.50c., Cleveland. On plates and structural material the price of 1.40c., Pittsburgh, is being firmly maintained. The demand for spikes continues good and the base price of \$1.65, Pittsburgh, is being maintained. There is a good demand for forging billets, but the supply is scarce and some of the mills are turning down inquiries. The demand for sheets continues good and prices are being maintained. The contract for 2000 tons of 3-in. to 36-in. cast iron pipe for the Cleveland Water Works Department has been awarded to the United States Cast Iron Pipe & Foundry Company at \$24 per net ton, delivered on the streets.

**Old Material.**—The demand shows some improvement, but mills, as a rule, are buying only in small lots for early needs, although some contracts are being made for late August and September delivery. Dealers and consumers are slow in getting together on prices. The former are not pushing sales, saying that they are getting all the business they want at present prices, and expecting better prices next month. The market is very firm. A scarcity of railroad malleable has resulted in an advance of \$1 a ton. The Baltimore & Ohio Railroad closed Monday on a list of about 4500 tons. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$15.50 to \$16.00
Old iron rails.....	17.00 to 17.50
Steel car axles.....	19.00 to 19.50
Old car wheels.....	15.50 to 16.00
Heavy melting steel.....	15.00 to 15.50
Relaying rails, 50 lb. and over.....	21.50 to 22.50
Agricultural malleable.....	13.50 to 14.00
Railroad malleable.....	15.50 to 16.00
Light bundled sheet scrap.....	8.00 to 8.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$17.50 to \$18.00
Cast borings.....	7.50 to 8.00
Iron and steel turnings and drillings..	9.50 to 10.00
Steel axle turnings.....	11.00 to 11.50
No. 1 bushelling.....	13.00 to 13.50
No. 1 railroad wrought.....	14.50 to 15.00
No. 1 cast.....	13.00 to 13.25
Stove plate.....	11.00 to 11.50
Bundled tin scrap.....	10.00 to 10.50

The Braddock Machine & Mfg. Company, Braddock, Pa., manufacturer of iron castings and rolling mill machinery, &c., is adding a 20-ton open hearth furnace to its plant, which will be ready about September 15 and will be used in making steel castings.

## Cincinnati.

CINCINNATI, OHIO, August 11, 1909.—(By Telegraph.)

One of the most interesting phases of changing conditions is shown in the demands on the jobbing foundries. Practically all these have jumped in the past three or four weeks from comparative inactivity to nearly full capacity. Daily heats of 20 to 25 tons are poured now in the larger of these, and there is a steady demand for molders. In the tool trade the heavier types are beginning to receive recognition. As yet prices remain unchanged, but immediate delivery of some standard tools is impossible. In finished lines there is a steady and growing demand from jobbers who are replenishing stocks. Scrap is also stronger.

**Pig Iron.**—Considerable selling of foundry iron in a quiet way is a feature of this market to-day and continually comes the inquiry for first quarter and half which, save with one or two Northern furnace interests, remains ungratified aside from the usual limited sales under special arrangements and to favored customers. The \$13, Birmingham, quotation seems available from but one or two Southern interests. For August and September delivery all are asking \$13.50 for last quarter, and one of the largest Southern interests to-day advised that this price was its minimum for any delivery this year, all sales subject to confirmation by furnace. Rockwood and Vanderbilt are reported out of the market for the present and one or two other Southern furnaces for August and September business. In the Northern district last week's prices are not appreciably changed, save that a furnace or two is added to the list of those out of the market. While \$15, Ironton, is quoted for the remainder of the year on No. 2 and \$15.50 for the first half, a disposition is noted to shorten next year's delivery at this price to the first quarter. It is reported that a considerable tonnage of Southern high silicon iron has been sold through this market, and from complaints of business lost at current quotations by Northern interests shading is charged. Inquiries are not numerous if one excepts those for next year's prices, although the aggregate of sales will foot up quite a respectable total, and the week has started exceptionally well. One agency notes sales to-day of about 5000 tons in scattering lots; a Southern Indiana stove manufacturer wants 300 tons of No. 2 Southern foundry for late September and the same amount for the last quarter; 300 tons of No. 2 soft are wanted by a St. Louis manufacturer for August and September; a steel maker in St. Louis territory is asking for prices on 5000 tons of basic, deliveries commencing in November and continuing through March. Very little basic is controlled in this market, although a central Ohio interest is credited with some good sales within the past few weeks to Ohio and adjoining steel makers. Stocks are being rapidly reduced by Northern furnaces and two or three idle stacks are expected to be made ready for blowing in within the next few weeks. Belfont is scheduled to blow in on the 19th on Bessemer for August and September delivery. Based on freight rates of \$3.25 from Birmingham and \$1.20 from the Hanging Rock District, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry.....	\$16.75
Southern coke, No. 2 foundry.....	16.25
Southern coke, No. 3 foundry.....	15.75
Southern coke, No. 4 foundry.....	15.25
Southern coke, No. 1 soft.....	16.75
Southern coke, No. 2 soft.....	16.25
Southern coke, gray forge.....	15.00
Ohio silvery, 8 per cent. silicon.....	19.70
Lake Superior coke, No. 1.....	16.70
Lake Superior coke, No. 2.....	16.20
Lake Superior coke, No. 3.....	15.70
Standard Southern car wheel.....	\$22.25 to 23.75
Lake Superior car wheel.....	20.50 to 21.00

(By Mail.)

**Coke.**—The supply of coke on track is being visibly lessened daily. So far producers have refrained from making a price for next year to consumers in this market, although there are many inquiries. Foundry coke at \$2 to \$2.25, at oven, for spot, and contract is firmer, and the outlook is good. Connellsville furnace coke is quotable at about \$1.60 for prompt delivery, and forward deliveries range from \$1.75 to \$1.85. Virginia furnace grades are selling at \$1.60 to \$1.75. Pocahontas grade range from \$1.65 to \$1.75 on contract.

**Sheets.**—A very satisfactory condition exists in the local sheet market, and prices are stiffening. Consumers are specifying liberally against contracts. Mills in this territory report that they are sold up for 60 days, and shading has practically disappeared. We quote for this market black sheets, No. 28 gauge, at 2.35c., Cincinnati, and No. 28 galvanized at 3.40c., Cincinnati; also painted roofing sheets, No. 28, 1.65c. per square, and of galvanized corrugated 2.90c. per square.

**Bars.**—Two large concerns are quoting 1.35c., mill delivery, on steel bars, with no contracting at that price, and the best that can be done is 1.30c., Pittsburgh. There is a very good sale from stock. The bar iron market is in much better shape, the general and rapid improvement in

business having removed much of the fierce competition that existed last year and the early part of this year. Local mills are selling the trade at about 1.45c., Cincinnati. A considerable tonnage of twisted steel bars will be required for the Ohio Mechanics' Institute Building, contracts for which are expected to be let some time this week.

**Structural Material.**—There appears to be but one price, a minimum of 1.40c., Pittsburgh, on structural material, and all representatives of the largest interests announce their concerns sold up for from 60 days to the remainder of the year. About 1000 tons are needed for the Ohio Mechanics' Institute structure here and contracts for this may be awarded this week; there are many bids, some from a distance.

**Old Material.**—All dealers do not confirm a rumor stating that old material has advanced from 50c. to \$1 during the week, although the largest interests announce a satisfactory business and inquiries accumulating. The railroads are offering but limited tonnages, a carload or so at a time, cleaning up certain departments, preferring to hold large accumulations for what they deem certain higher prices all along the line. Dealers' prices to the trade are about as follows, f.o.b. Cincinnati:

No. 1 R. B. wrought, net ton.....	\$14.50 to \$15.00
Cast borings, net ton.....	6.50 to 7.00
Heavy melting steel scrap, gross ton.....	14.00 to 14.50
Steel turnings, net ton.....	8.50 to 9.00
No. 1 cast scrap, net ton.....	14.00 to 14.50
Burnt scrap, net ton.....	10.00 to 10.50
Old iron axles, net ton.....	18.50 to 19.00
Old iron rails, gross ton.....	15.75 to 16.25
Old steel rails, short, gross ton.....	14.00 to 14.50
Old steel rails, long, gross ton.....	15.00 to 15.50
Relaying rails, 56 lb. and up, gross ton.....	21.50 to 22.00
Old car wheels, gross ton.....	14.50 to 15.00
Low phosphorus scrap, gross ton.....	14.00 to 14.50

## New York.

NEW YORK, August 11, 1909.

**Pig Iron.**—The rapid advance in prices made by a number of the leading furnace companies has tended to keep current business down to routine transactions. For that reason the market has not been seriously tested so far as foundry irons are concerned. Important selling interests are asking \$17, at furnace, for No. 2 foundry, but metal is still available at lower prices. We quote Northern No. 1 foundry, \$17.50 to \$17.75; No. 2 foundry, \$17.25 to \$17.50; No. 2 Plain, \$16.75 to \$17. Alabama iron is quoted \$17.50 to \$18 for No. 1 and \$17.25 to \$17.50 for No. 2 foundry.

**Steel Rails.**—A sale of 10,000 tons to the Chicago Great Western has been made by a Steel Corporation interest and the Baltimore & Ohio additional order of 20,000 tons has been divided, 12,000 tons going to the corporation, while the Pennsylvania Steel Company is credited with most of the balance. The latter company has sold 3500 tons to the Atlantic Coast Line, while 2500 tons for the Wabash has been placed with the Lackawanna Steel Company. The appearance of one large inquiry for rails for 1910 suggests the possibility of some of next year's tonnage coming to the mills for winter rolling. In the case of a number of mills outside of the Chicago district some such arrangement would fill a gap that might otherwise exist between the work booked for this year and the early rollings next year for spring track laying. In the winter of 1906-7 there was such rolling and stocking of rails against the spring work of the railroads.

**Structural Material.**—All fabricating works are well occupied and some of them could increase their working forces but for the limitation imposed by deliveries from structural mills. About 12 weeks is the time now required to accumulate from the mill the assortment of material required on an ordinary structural contract. The question of deliveries is a factor in decisions regarding some new work. It would now be difficult to get steel on some proposed apartment house contracts in New York City in time to permit of their completion by May 1, 1910, and there may be some postponements of such undertakings. The volume of new work is in general not up to the rate at which it has been coming forward in recent months. Railroads as a rule are doing little just now and their important requirements for 1910 will not be figured on for some months. The Norfolk & Western has placed 1500 tons for a viaduct on Albemarle Sound, a long pending project, with the Pennsylvania Steel Company, and is also in the market for steel for a pier shed and an office building. The Baltimore & Ohio has placed some bridge business, the Pennsylvania is in the market for several bridges and various small amounts have been placed by Eastern roads. The American Bridge Company's output was 40,000 tons in July. It promises to exceed 45,000 tons in August, and a rate of 50,000 tons promises to be maintained through the remainder of the year. Bids on the New York, Westchester & Boston steel work, about 22,000 tons, will be opened Friday. The new St. Louis bridge, about 15,000 tons, will come up in October. The mills are generally selling to jobbers for delivery to October 1 and to manufacturers for delivery to the end



of the year, on structural material as well as bars. We quote tidewater deliveries, mill shipments, at 1.56c.

**Ferroalloys.**—Although the price of 50 per cent. ferro-silicon, Philadelphia delivery, has increased to \$66, the advance represents only the increase due to the new tariff. No business is reported at the new figure. Eighty per cent. ferromanganese, which underwent a reduction of \$1.50 a ton in duty, is quoted at \$41 to \$42 for lots larger than a carload, deliveries running into the first quarter of next year. The only sale coming to notice was of a single carload and it brought \$42.

**Bars.**—A better demand is reported by Eastern bar iron manufacturers and prices are firmly held. Quotations range from 1.50c. to 1.55c., tidewater, for bar iron and 1.46c. to 1.51c., tidewater, for steel bars.

**Cast Iron Pipe.**—The most important letting on which proposals are now asked is that of the city of New Bedford, Mass., to be opened August 17, and which comprises 6513 tons of various sizes, ranging from 6 in. to 36 in., on which deliveries are to begin in October and to be completed in April. The city of New York will open bids from contractors August 18 on about 2000 tons for the Borough of Manhattan and a smaller quantity for the Borough of Richmond. Pipe foundries are anxiously awaiting an upward movement in prices, which they believe will then bring in orders for pipe on a great deal of delayed work, which simply needs a little stimulus of this kind to develop into life. So far no attempt has been made to secure concerted action in asking better prices, but a tendency to advance is seen on account of the increasing cost of raw material, dealing with a slowly improving demand. Carload lots of 6 in. are quoted at \$23 to \$23.50 per net ton, tidewater.

**Old Material.**—The arrangement into which the steel works in eastern Pennsylvania have entered for the purchase of steel scrap to cover their requirements for the remainder of the year appears to have checked the advancing tendency in this class of material. The consumers of steel scrap who are outside of this arrangement do not purchase sufficiently large quantities to make a satisfactory channel through which dealers can conduct their regular operations. At present trade in this line is practically at a standstill, as the buyers for the associated mills are said to have covered their wants for the present, probably waiting for the railroad lists to be issued this month, and perhaps to see whether the \$3 per ton reduction in the scrap duty may not induce early importations from Canada or elsewhere. Dealers are greatly perplexed over this situation, but at the same time admit that the arrangement seems to be an advantageous one in the interests of the mills. The foundry trade is doing considerably better, and prices on cast scrap are stronger. Some demand is seen for old car wheels, but the supply is so plentiful that the demand will have to grow considerably heavier to affect prices. Relaying rails are in stronger demand and 50c. higher. An enlarged consumption is observed in lumbering operations, requiring rails for logging roads. Most of these rails are going to the South, but some sales have been made for Canada. Quotations are as follows, per gross ton, for delivery in New York and vicinity:

Old girder and T-rails for melting	\$13.50 to \$14.00
Heavy melting steel scrap	13.50 to 14.00
Relaying rails	21.00 to 21.50
Standard hammered iron car axles	21.00 to 21.50
Old steel car axles	18.50 to 19.00
No. 1 railroad wrought	16.00 to 16.50
Iron track scrap	14.50 to 15.00
No. 1 yard wrought, long	14.00 to 14.50
No. 1 yard wrought, short	13.00 to 13.50
Light iron	8.00 to 8.50
Cast borings	8.50 to 9.00
Wrought turnings	10.00 to 10.50
Wrought pipe	12.00 to 12.50
Old car wheels	14.50 to 15.00
No. 1 heavy cast, broken up	14.00 to 14.50
Stove plate	12.00 to 12.50
Locomotive grate bars	12.00 to 12.50
Malleable cast	15.00 to 15.50

St. Petersburg advices, under date of August 4, state that arrangements were completed that day by American manufacturers of agricultural implements, understood to be closely connected with the International Harvester Company, for the establishment of a large factory in Russia. The capital of the company to be organized is placed at 12,000,000 rubles (\$6,000,000). Russian merchants are stated to have a share in the enterprise.

Fire brick was produced in the United States in 1908 to the value of \$10,696,216, compared with \$14,946,045 in 1907, a decrease of 28.43 per cent., according to the United States Geological Survey. The quantity decreased from 783,017,000 in 1907 to 552,366,000 in 1908, a loss of 29.46 per cent.

## Iron and Industrial Stocks.

NEW YORK, August 11, 1909.

Prices of iron and industrial stocks steadily maintained an upward course the past week, almost every day showing a new high record price for United States Steel common, while other stocks vied with it in strength and activity. The magnificent showing for the fall crops in the Government report issued on Monday added further strength to the situation. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com.	15 1/2 - 16 1/2	Railway Spr., com.	52 1/2 - 54 1/2
Allis-Chalm., pref.	55 1/2 - 57	Railway Spr., pref.	108 1/2 - 110
Beth. Steel, com.	32 - 34 1/2	Republic, com.	36 1/2 - 39 1/2
Beth. Steel, pref.	64 - 67	Republic, pref.	106 1/2 - 108 1/2
Can, com.	12 1/2 - 13 1/2	South. I. & S., com.	20 1/2 - 21 1/2
Can, pref.	83 1/2 - 84 1/2	South. I. & S., pref.	56 1/2 - 58 1/2
Car & Fdry, com.	68 1/2 - 69 1/2	Sloss, com.	85 1/2 - 88 1/2
Car & Fdry, pref.	122 1/2 - 124 1/2	Pipe, com.	34 - 34 1/2
Steel Foundries	60 - 63 1/2	Pipe, pref.	84 - 85
Colorado Fuel	46 1/2 - 47 1/2	U. S. Steel, com.	74 1/2 - 78 1/2
General Electric	170 1/2 - 172 1/2	U. S. Steel, pref.	126 1/2 - 127 1/2
Gr. N. ore cert.	80 1/2 - 86 1/2	Westinghouse Elec.	86 - 90
Int. Harv., com.	89 - 89 1/2	Chi. Pneu. Tool.	24 - 25
Int. Harv., pref.	122 - 122 1/2	Amer. Ship, com.	67 - 67 1/2
Int. Pump, com.	39 1/2 - 41	Cambria Steel	43 1/2 - 46 1/2
Int. Pump, pref.	87 1/2 - 88 1/2	Lake Sup. Corp.	25 1/2 - 26 1/2
Locomotive, com.	67 1/2 - 69 1/2	Warwick	9 - 9 1/2
Locomotive, pref.	120 1/2 - 121	Crucible St., com.	13 - 14 1/2
Nat. En. & St., com.	16 1/2 - 17 1/2	Crucible St., pref.	80 1/2 - 82
Nat. En. & St., pref.	89 - 89 1/2	Harb.-Walk. Ref., com.	25
Pressed St., com.	53 1/2 - 55	Harb.-Walk. Ref., pref.	91
Pressed St., pref.	109 - 111		

\* Ex dividend.

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 77, preferred 126; Car & Foundry common 68, preferred 122; Locomotive common 67, preferred 120 1/2; Steel Foundries 62; Colorado Fuel 46; Pressed Steel common 53 1/2, preferred 111 1/2; Railway Spring common 51 1/2; Republic common 38 1/2, preferred 106 1/2; Sloss-Sheffield common 86 1/2; Cast Iron Pipe common 23 1/2, preferred 84; Can common 12 1/2, preferred 84.

## Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall Street, New York, report the following quotations:

	Bid.	Asked.
Bethlehem Steel 1st ext. 5s, due January, 1926	89 1/2	89 3/4
Bethlehem Steel purchase money 6s, August, 1998	117	118
Buffalo Iron 5s, October, 1925	95	100
Buffalo & Susquehanna Iron 1st 5s, June, 1932	99 1/2	..
Buffalo & Susquehanna Iron deb. 5s, January, 1926	94	..
Dominion Iron & Steel 5s, July, 1929	97	97 1/2
La Belle Iron Works 1st 6s, December, 1923	104 1/2	..
Lackawanna Steel 1st 5s, April, 1923	98 1/2	..
Maryland Steel 1st 5s, February, 1922	102	103
Pennsylvania Steel 1st 5s, November, 1917	102	..
Pennsylvania & Maryland Steel 6s, September, 1925	110	..
Republic Iron & Steel 1st 5s, October, 1934	102	102 1/2
Sloss Iron & Steel 1st 6s, February, 1920	106	108 1/2
Sloss Iron & Steel consol. 4 1/2s, April, 1918	94 1/2	97
Jones & Laughlin 1st 5s, May, 1939	101 1/2	101 1/2

## United States Steel Corporation.

Collateral Trust 5s, Series A, C, E, April, 1951	114 1/2	115 1/2
Collateral Trust 5s, Series B, D, F, April, 1951	114 1/2	115 1/2
Sinking Fund 5s, April, 1963	107 1/2	108
Union Steel 1st 5s, December, 1952	105 1/2	106 1/2
Clairton Steel 5s, 1908-1913	101	..
St. Clair Furnace 1st 5s, 1910-1939	101	..
St. Clair Steel 1st 5s, 1908-1926	101	..
Illinois Steel deb. 5s, January, 1910	100	..
Illinois Steel 5s, April, 1913	100	..

All bonds quoted "and interest."

The stockholders of the American Rolling Mill Company, Middletown, Ohio, have been offered the right to subscribe for \$300,000 additional common stock at par (\$100 a share) in the ratio of three shares of new for every eight shares of old stock held. This will increase the common stock to \$1,100,000. There is also \$800,000 6 per cent. cumulative preferred, of which \$765,000 was issued. A Cincinnati paper notes that the common stock has sold for some time above \$300 a share, and on July 28 closed at \$340.

**Dividends.**—The Sloss-Sheffield Steel & Iron Company has declared the regular quarterly dividend of 1 1/4 per cent. on the common stock, payable September 1.

The Niles-Bement-Pond Company has declared the regular quarterly dividend of 1 1/2 per cent. on the preferred stock, payable August 16, and 1 1/2 per cent. on the common stock, payable September 20.

The Pratt & Whitney Company has declared the regular quarterly dividend of 1 1/2 per cent. on the preferred stock, payable August 16.

The American Radiator Company has declared the regular quarterly dividend of 1 3/4 per cent. on the preferred stock, payable August 16, and 1 1/2 per cent. on the common stock, payable September 30.

On August 1 the La Belle Iron Works, Steubenville, Ohio, paid a quarterly dividend of 2 per cent. The stock of this company, which is \$100 par, has recently sold as high as \$148.

The American Shipbuilding Company has declared an annual dividend of 4 per cent. on the common stock, payable quarterly on the first of September, December, March and June.

## Metal Market.

NEW YORK, August 11, 1909.

**Copper.**—Announcement of the figures of the Copper Producers' Association last night caused a good deal of excitement at the opening of the markets this morning, and as a result the situation is extremely unsettled. Quotations at this writing are entirely nominal, neither seller nor buyer being willing to settle down to an actual trade until things are somewhat clearer. The London market opened up this morning with the phenomenal advance of £1 12s. 6d. above yesterday's closing quotation. This is equivalent to an advance of  $\frac{3}{4}$ c. a pound here. The producers' report which caused all the flurry is printed in another column. It shows a heavy decrease in stocks, the net falling off in the world's visible supply, amounting to something over 10,500,000 lb. The decrease in stocks on hand in the United States amounted on the first of this month to slightly over 32,262,000 lb., while during the same period the stocks in Great Britain increased nearly 22,000,000 lb. The deliveries into domestic consumption show 75,520,083 lb., which, of course, is phenomenal. When it is considered that in 1906 the high water mark of monthly consumption here was only slightly above 65,000,000 lb., it will be seen that the figures given by the producers indicate that the American consumers are again replenishing their stocks. It would appear that the policy of buying only from hand to mouth has been terminated, and that the American manufacturers who use quantities of copper in their products have faith in the business future of this country. Lake copper was nominally quoted this morning at 13.50c. to 13.75c., and electrolytic was quoted at 13.25c. At the Metal Exchange a sale of 250 tons of standard copper was made at 13c. shortly after the call, and further bids at this figure brought forth no offerings. The closing prices quoted on 'change for standard were 12.87 $\frac{1}{2}$ c. to 13.15c. The closing London cables named £60 5s. for spot, £61 2s. 6d. for futures and £63 for best selected. These figures show a falling off of 7s. 6d. from the morning cable. The advance above last week's figure for spot, however, is £1 11s. 3d. One of the large electrical companies has been buying heavily during the last few days, and early this week another large interest bought 500 tons of lake at 13.12 $\frac{1}{2}$ c. Exports so far this month amount to 7130 tons, which is a fairly good showing. Trading in standard copper at the Metal Exchange has shown a steady increase in volume, and there are indications that the American operators who heretofore have done their speculating in London will do it in New York instead.

**Pig Tin.**—A firm and slowly advancing market has characterized the week and the impression prevails that a general upward movement has been started. Reports are traveling about of some good sized purchases in the East for American account and the general tone is one of confidence in the near future. As this metal is so susceptible to speculation, the agitation in the copper market will undoubtedly show its effect on it. At the close of the market to-day it was strong, at 29.80c. to 29.90c. for spot. Sales of 85 tons were made at the Metal Exchange at 29.75c. for spot and August delivery, just prior to the close. The closing London cable named £135 for spot and £136 10s. for futures. Prices during the week were:

	Cents.
August 5.....	29.35
August 6.....	29.27 $\frac{1}{2}$
August 9.....	29.42 $\frac{1}{2}$
August 10.....	29.50
August 11.....	29.85

Stocks in this city are fair and the arrivals so far this month have shown up very well. Indications at present are that deliveries this month will be quite as large as in July. The arrivals so far this month aggregate 21.29 tons and the afloats are figured at 1068 tons.

**Lead.**—The market has been quiet throughout the week. While prices at this writing are a bit firmer than a day or two ago, they are still lower than they were a week ago. Quotations at the close to-day were 4.25c. to 4.32 $\frac{1}{2}$ c. for spot and 4.37 $\frac{1}{2}$ c. to 4.42 $\frac{1}{2}$ c. for September deliveries. London closed £12 7s. 6d. Business has been quiet.

**Spelter.**—Prices are very firm and higher. The demand has increased and sellers are showing some reluctance at offering the metal. At the close to-day the market stood 5.65c. to 5.85c. here, and the closing London cable named £22 for spot.

**Antimony.**—While prices show an advance above those quoted last week, the market is actually a bit lower, as the higher figures show the increased duty rather than an actual advance. In anticipation of the new duty a good deal of the metal has been brought into this country, with the result that stocks are now large and business in London or American account is very slight. Cookson's is now quoted at 8.50c., while Hallett's is 8c. to 8.25c., and other brands are 7.25c. to 7.50c. The new duty is 1 $\frac{1}{4}$ c. per lb., as compared with  $\frac{3}{4}$ c. which prevailed in the old schedule.

**Tin Plate.**—There is no change in price and no new developments have transpired in the general situation. We quote \$3.64 for 100 lb. I C coke plates.

**Old Metals.**—The following dealers' selling prices represent the New York market:

	Cents.
Copper, heavy cut and crucible.....	12.50 to 12.75
Copper, heavy and wire.....	12.25 to 12.50
Copper, light and bottoms.....	11.25 to 11.50
Brass, heavy.....	9.00 to 9.25
Brass, light.....	7.00 to 7.25
Heavy machine composition.....	11.25 to 11.50
Clean brass turnings.....	8.00 to 8.25
Composition turnings.....	9.50 to 9.75
Lead, heavy.....	4.10 to 4.15
Lead, tea.....	3.75 to 3.80
Zinc scrap.....	3.75 to 3.87 $\frac{1}{2}$

## July Copper Production and Stocks.

The monthly statement of the Copper Producers' Association issued this week showed a reduction in the stock of marketable copper of all kinds on hand at all points in the United States on August 1 of 32,261,454 lb., as compared with the stock on hand July 1. The figures are as follows:

	July 1. Pounds.	August 1. Pounds.
Stock of marketable copper of all kinds on hand at all points in the United States .....	154,858,061 July.	122,596,607 June.
Production of marketable copper in the United States from all domestic and foreign sources.....	118,277,603 July.	116,567,493 June.
Deliveries of marketable copper for consumption and export.....	150,539,057	131,557,573

Of the deliveries in July 75,520,083 lb. were for domestic consumption.

**The Production of Coke in Illinois in 1908.**—The coke industry in Illinois has gained prominence, first, by the construction in 1906 of 160 Semet-Solvay ovens at South Chicago, and, second, by the construction of 280 Koppers regenerative by-product ovens by the Illinois Steel Company at Joliet. Of the latter, which were begun in 1907, one-half were put into operation in 1908. The coal for these by-product ovens is drawn from the mines of Fayette County, W. Va. One other establishment making coke in Illinois in 1908 was the Gallatin Coal & Coke Company at Equality, which cokes Illinois coal in Belgian ovens. The production of coke in Illinois in 1908, as reported to the United States Geological Survey, shows a smaller percentage of decrease than in any other State of any importance, in the coke-making industry, the output amounting to 362,182 net tons, valued at \$1,538,952, against 372,697 tons, valued at \$1,737,464, in 1907 a decrease of 2.82 per cent. in quantity and 11.43 per cent. in value. The average price per ton declined from \$4.66 to \$4.25.

The Spencer Wire Company, Worcester, Mass., has contracted to duplicate its present installation of a Westinghouse 16 x 18 in. vertical gas engine, rated at 200 hp., and a 250 hp. Westinghouse suction producer plant, to meet the power needs of its factory. The engine will be direct connected to a 135-kw., three-phase, 440-volt., 60-cycle alternator, similar to that now running. The initial equipment was but recently installed and is representative of the most improved producer plant practice for a moderate capacity.

The Shenango Furnace Company, Pittsburgh, has about completed a new ore storage yard at its furnaces at Sharpsville, Pa., which will have a capacity for holding 400,000 tons. The yard will serve furnaces Nos. 1 and 3 and the projected new No. 2 stack. It is equipped with a Brown hoist electric traveling bridge, which spans the trestle and ore yard and runs 65 ft. above the yard line. An electric transfer car is also operated in this connection.

The Youngstown Steel Company, Youngstown, Ohio, has bought from J. V. Thompson, Uniontown, Pa., a tract of 1300 acres of coal land in the Dunkard Creek section of Greene County. The purchasing company is closely affiliated with the Brier Hill Coal & Coke Company, but does not expect to develop this property at present.



## Judicial Decisions of Interest to Manufacturers.

ABSTRACTED BY A. L. H. STREET.

**Notes—Defenses.**—In a suit on a note by the payee against the maker, an answer alleging a contemporaneous verbal agreement that there should be an accounting between the parties at a later date, and if the note was in excess of the maker's indebtedness he should have credit, and that the note was in excess of what the maker owed, stated an equitable defense. If the strict letter of the law would preclude the maker from offering proof entitling him to credits on the note by reason of a contemporaneous oral agreement, because the note was evidence of a full settlement, equity would allow him to show that the note was not intended as a full settlement between the parties and that it was agreed that there should be a further settlement, in which the maker should have the benefit of credits claimed by him. (Court of Civil Appeals of Texas, *Allen vs. Herrick Hardware Company*, 118 Southwestern Reporter 1157.)

**Notes Procured by Fraud—Attorney's Fees.**—If notes executed by defendants by reason of fraudulent representations were acquired by a bank in the usual course of business in good faith and for full consideration, and defendants, when the notes fell due, with full knowledge of the misrepresentations, voluntarily executed renewal notes, they could not avoid liability because of the misrepresentations, the execution of the new notes amounting to a voluntary payment of the original ones. In an action on notes, where one of them was not due when suit was brought, and after it became due an amended petition was filed, plaintiff was entitled to the full attorney's fees provided by the notes, it clearly appearing, as was averred, that suit was necessary to collect them. (Court of Civil Appeals of Texas, *Harfst vs. State Bank of El Campo*, 119 Southwestern Reporter 694.)

**Sale of Collaterals by Bank.**—Where certain notes pledged to a bank, after being sold, never again appeared in a subsequent list of collaterals held by the bank for the borrower, and his bankbook was balanced at stated times and delivered to him throughout subsequent years, and the notes for which the collateral was deposited were delivered to him when paid and showed the payments which had been indorsed thereon, the bank sufficiently accounted for whatever had been received on such collateral notes. Where a bank had once accounted for the proceeds of collaterals sold it was not bound to assume the burden of a second accounting, the burden of showing any mistake in the first account being on the borrower. (Supreme Court of Iowa, *Des Moines National Bank vs. Sisson*, 121 Northwestern Reporter 533.)

**Notes—Liability On—Purchasers in Good Faith.**—Defendants executed certain notes, payable to bearer, and delivered them to a firm, for the privilege of acting as exclusive agents of the firm in the sale of certain patented articles in a specified territory, and such notes were discounted by a bank without notice of any defense. Held, that the defense that the firm had sold the same privilege to numerous other parties could not be urged against the bank. (Mississippi Supreme Court, *Bank of Newton vs. Simmons*, 49 Southern Reporter 616.)

**Partnership—Notes.**—A general partner in a trading business can borrow money in the usual course of business for the benefit of the firm and sign the firm name to a note for the repayment of the loan, but has no authority to bind the firm as an accommodation indorser to commercial paper given in a transaction in which the partnership has no interest. When the holder of a note proves that he receives it before maturity in good faith for a valuable consideration, the burden is on the maker to prove that the holder had actual notice of a specific fact which originally would affect the validity of the paper. That a member of a trading partnership indorsed the firm name on commercial paper does not raise a conclusive presumption that the indorsement is for the accommodation of the maker. (Kansas City Court of Appeals, *Hayes vs. Blaker*, 119 Southwestern Reporter 1004.)

**Conditional Sales—Rescission.**—Defendant sold plaintiff machinery, taking in payment one-half cash and a note for the balance, with title reserved until the property was fully paid for. After a test it was accepted by plaintiff in a written acknowledgment of satisfaction, and there was no evidence of fraud in the test or in the negotiations leading up to the sale. Held that, on replevin of the machinery for default in the payment of the note, plaintiff cannot have the replevin proceedings stayed, the note canceled, and the cash payment refunded on the ground of breach of warranty. (Mississippi Supreme Court, *Freeman vs. Keene*, 49 Southern Reporter 567.)

**Sales—Delivery.**—Under a contract for the purchase of 3000 tons of pig iron to be delivered about equally during three specified months f.o.b. cars at the seller's furnace, the buyer was obligated to accept delivery during the time speci-

fied on board of cars at the furnace, and his refusal to give shipping directions so that delivery could be made was a breach of the contract. Where the purchaser of a quantity of iron refused to accept delivery as required by the contract, the seller was under no duty to comply with the demand of the purchaser that it be otherwise delivered at an increased expense to the seller, but had the right to stand upon its contract and recover damages for the breach thereof. (United States Circuit Court of Appeals, Sixth Circuit, *Hirsch vs. Georgia Iron & Coal Company*, 169 Federal Reporter 578.)

**Sales—Breach of Contract by Purchaser—Defenses.**—Plaintiff sold a specified number of tons of pig iron to be delivered f.o.b. in monthly installments of a specified number of tons. The iron was not to be shipped to the same consignee, but to different parties under direction of the purchaser. The purchaser had given shipping directions as to two-thirds of the tonnage. Held that he could not set up as a defense for breach of his contract that the seller had not delivered the remainder of the iron, where the latter had repeatedly asked for shipping directions as to it and none had been given. A contract for the sale of standard pig iron not yet manufactured and to be delivered in installments is an executory contract for the breach of which by the purchaser the seller can recover the difference between the selling price and the market value at the time and place of delivery. (Pennsylvania Supreme Court, *Sharpsville Furnace Company vs. Snyder*, 72 Atlantic Reporter 786.)

**Sales—Breach of Contract—Rights of Seller.**—The damages to the seller of beams to be manufactured abroad and imported, by refusal of the purchaser to take them, is the contract price less the cost to the seller of fulfilling the contract on his part and the profit which he realized on the sale of the beams after the purchaser refused to take them. In an action to recover such damages, the purchaser cannot complain of a computation of damages based on unsatisfactory evidence as to the profits realized by the seller on a subsequent sale of the beams, where the purchaser offers no proof as to that issue and objects to that offered by the seller. (New York Supreme Court, Appellate Division, First Department, *Isaacs vs. Terry & Tench Company*, 117 New York Supplement 369.)

**Payment of Debts—Presumptions.**—The presumption of payment of a debt from the lapse of 20 years without recognition by the debtor of his liability is conclusive, and not interrupted by the debtor's absence from the State and the creditor's ignorance of his location and any property of the debtor subject to claim. (Alabama Supreme Court, *Roach vs. Cox*, 49 Southern Reporter 578.)

**Injury to Employee—Negligence—Proximate Cause.**—To enable a mason to repair a furnace, it was necessary to move an ore bin toward a track used in the operation of the furnace. The engine using such track thereafter safely passed the bin. Though a superior knew of the location of the bin and of the mason's peril if the engine came in contact with it he gave signals to accelerate the speed of the engine drawing a load. Because of the accelerated speed, the engine wobbled and struck the bin, injuring the mason. Held that the superior was negligent, entitling the mason to recover for the injury, notwithstanding the mason's negligence in failing to exercise care in locating the bin, on his voluntarily moving it, since his negligence became only a condition on which the subsequent negligence of the superior operated as the proximate cause of the accident. (Supreme Court of Alabama, *Tennessee Coal, Iron and Railroad Company vs. Gandy*, 49 Southern Reporter 369.)

**Employee's Injury.**—An employer must furnish an employee a reasonably safe place to work and use reasonable care and foresight not to subject him to unnecessary danger, taking into account any special danger involved in the methods of work. An employer is liable for injuries to an employee, though in part caused by the negligence of a fellow employee, if the injury would not have happened but for the employer's negligence in failing to furnish a safe place to work. (New York Supreme Court, Appellate Division, Fourth Department, *Pope vs. Utica Pipe Foundry Company*, 116 N. Y. Supp. 921.)

**Injuries to Employees—Machinists.**—A servant, in entering an employment, may rely on the assumption that reasonably safe appliances are provided, and while a servant assumes the risk of dangers incident to the business, he does not assume risks of which he had no knowledge, nor any reasonable cause to anticipate. Whether a servant, injured by a piece of a pin of a tube expander flying off while used in the course of his employment as a machinist, assumed the risk of the defective condition of the pin, because not properly annealed, held, under the evidence, for the jury. (Massachusetts Supreme Judicial Court, 88 Northeastern Reporter 782.)

**Injuries to Employees—Molders.**—In an employee's action for injuries by an explosion occurring while pouring molten iron into a pig bed, whether the explosion was caused by the accumulation of rust or moisture in the pig bed through defendant's negligence held for the jury. If the dangerous condition of the appliances existing when an employee was injured might, according to ordinary human experience, have resulted from other causes than the employ-

er's negligence, the burden was on an employee, in an action for injuries from such dangerous condition, to exclude the operation of such other causes. It is the employer's duty to provide safe and suitable appliances, which will not involve unusual risks to employees when used in the ordinary manner. Accumulated rust and moisture in a mold into which molten metal was poured was a latent defect, which the employer should have discovered and guarded against. Even an experienced employee thoroughly familiar with the risks of his employment, does not assume the risk of injuries caused by the employer's negligence. An employee, though experienced and familiar with the dangers of his employment, did not assume the risk of injury from the negligence of those fellow employees for whose negligence the employer was liable under Massachusetts Rev. Laws 1902, C. 106, Section 71, giving an employee the same right of action as if he had not been an employee, for injuries caused by the negligence of one intrusted with keeping ways, &c., in condition, or one intrusted with the duties of superintendence, &c. A molder who was not charged with the duty of inspecting the molds, was not bound to guard against the existence of any hidden dangers therein which were not discoverable by an inspection made while pouring the metal and which would not have existed if proper care had been taken by the employer, and hence did not assume the risk of injury caused thereby. (Massachusetts Supreme Judicial Court, *Brooks vs. Kinsley Iron & Machine Company*, 88 *Northeastern Reporter* 771.)

**Attachment—Property Sold on Condition of Payment.**—Where an attachment for purchase money of personal property to which the plaintiff in attachment has reserved title is served by seizure of the property, before the property can be levied upon and sold under final judgment and execution, the plaintiff must reconvey it by quitclaim to the defendant, but this reconveyance is not necessary before the issuance of attachment and seizure of the property thereunder. (Georgia Court of Appeals, *Johnson vs. Walter J. Wood Stove Company*, 64 S. E. Rep. 287.)

## New Publication.

**History of the Clay Working Industry in the United States.**—By Heinrich Ries and Henry Leighton. Pages, ix+270, 6 x 9 in. Illustrations, 11. Published by John Wiley & Sons, New York. Cloth, \$2.50 net.

A previous work of Professor Ries, who has the chair of economic geology in Cornell University, was "Clays: Their Occurrence, Properties and Uses." His associate in the preparation of the present work is assistant economic geologist of the New York Geological Survey. The materials were collected in large part for the Department of Economics and Research of the Carnegie Institution of Washington. The authors have drawn upon magazines, government and state reports and private information for data, which have been supplemented by information from state geologists, manufacturers of clay products, and individuals acquainted with the history of the industry in particular localities. Part 1 of the volume is given up to a résumé of the clay working industry by products. These in order are common brick, pressed brick, ornamental brick, enameled brick, architectural terra cotta, hollow ware for structural work, roofing tile, floor and wall tile, sewer pipe, conduits, paving brick, fire brick, pottery. The second part, which constitutes the bulk of the book, takes up the States in alphabetical order and traces the development of the clay working industry of each. Naturally details relating to mode of occurrence and distribution of clays, which were the particular subject of the previous work of Professor Ries, are omitted. Some attention is given to developments in manufacturing methods, but technology is made secondary to historical and commercial data.

The earliest record of sewer pipe manufacture goes back to 1844, when, it is said, that several plants were running or about to start in West Virginia. The first manufacture of sewer pipe in Ohio, which is the most important contributor to that industry, was in 1851, when the first Akron shale pipe was made by the late D. E. Hill. The beginning of the paving brick industry is located in 1872, when some of the streets of Charleston, W. Va., were paved with brick. A marked extension in this branch of clay work occurred in the last decade of the 19th century, when the clay works in Indiana began to appreciate the value of the coal measure clays and of the Knobstone shales. About the time the in-

dustry started in Indiana there were in Ohio no less than 37 firms in operation, the materials used being mainly fire clays and to a smaller extent shales and alluvial clays.

The fire brick industry was first developed in New Jersey. Some fire brick are said to have been made in that state in 1812, but the location of the plant is not known. However, in 1825, the Salamander Works at Woodbridge, N. J., was in operation. In 1837, the Mount Savage, Md., fire clay was discovered and two years later the Union Mining Company began operations. Soon after, also the Kittanning plastic clay and the Clarion County flint clay of Pennsylvania were worked by S. Barnes & Company, Rochester, Pa., who started one of the earliest firebrick works in that state. In 1895, the Olive Hill Fire Brick Company, Olive Hill, Ky., began using carboniferous flint clays, though these had been worked some time previously to that year.

The authors say that the growth of the firebrick industry has been attended by improvements in manufacture, not so much in the machinery used as in the compounding of proper mixtures, giving the best life under the varying conditions of service. Some firms have brought out a great variety of shapes and have succeeded in making a product of very high refractoriness, while others in recent years have introduced bauxite bricks. While generally manufacturers of clay products in the United States mine their own clay near their works, there are some lines in which the industry has been developed apart from the sources of clay and, as in the higher grades of pottery, wall tile and some refractory wares, raw materials are shipped from a considerable distance. Thus an important clay mining industry has grown up to develop the high-grade clays and ship them to the manufacturers.

A vast amount of painstaking work is represented in this book, which serves to give the clay working industry a position of importance not ordinarily accorded it. Moreover, the book suggests, rather than specifically indicates, that the technical side of the industry has reached a larger development than is usually credited.

**An Airship Factory.**—The first motor car factory in this country to take up the manufacture of airships as a regular line of business is that of the Napier Automobile Company at Jamaica Plain, Mass., following the example of the Clement-Bayard Company in France. Montague S. Napier, the head of the parent concern in England, has been contemplating this step for the last five years and experimenting with a motor to be used in aircraft. Principally the company will devote itself to dirigibles, but it is also probable that an aeroplane of foreign design will be manufactured. Several types built in England are now under consideration. The machines to be built will be sold at from \$8000 to \$35,000, according to the luxuriosity of the cars. Particular attention will be given to this feature, and they will approach practice in automobile construction in this respect. In addition to the expert workmen who will be employed and others who will be trained under them, a staff of aerial pilots will be retained to instruct purchasers in handling the machines.

The Southern Wisconsin Power Company has received from the Federal Government approval of its plan to dam the Wisconsin River at Prairie du Sac. This will render possible an extensive hydroelectric development and power distribution system to a net work of industrial committees, supplementary to the same company's project at Kilbourn, Wis., recently completed, from which current was transmitted last week as far as Milwaukee.

Eighteen union machinists at the Western Motor Works, Logansport, Ind., have struck for an advance from 27½ cents an hour to 32½ cents. The company manufactures automobile gas engines and has orders ahead for a full day (24-hr.) run for the next two years. It employs 250 machinists and has an open shop.



## The Machinery Trade.

NEW YORK, August 11, 1909.

Machinery houses were favored with considerable business the past week, which, though not equal to that of the two weeks when the large lists were covered, compared favorably with the previous week. This business was made up entirely of small orders from various sources. Inquiries were more numerous and give promise of sufficient business to constitute a good month. None of them are very extensive, but their aggregate is fairly large. The increasing number of inquiries being received clearly indicates the upward trend of business, the gradual expansion of which is becoming more apparent every day. The activity on the part of intending purchasers has created an exceedingly optimistic feeling in the trade, and there are very few who do not anticipate a steady and healthful growth to a high level. Were the railroads and important industrial corporations to come into the market for extensive lists of tools, as is believed they will before a great while, the trade in this territory will about reach normal. As it is, deliveries on some makes of machines have been extended two and three months. One builder states that he cannot deliver some sizes of machines before October. Some houses report an excellent demand for their machines and frequently it is stated that the past month's business exceeded that for any month for the past year or more. The constant advance in prices of raw material is being commented upon in the trade and it would not be surprising to hear of advances in prices of machine tools in the near future.

With the growing demand for machinery the question of delivery is already becoming a serious one with builders of certain tools on account of the scarcity of skilled labor. Manufacturers from other parts of the country have had representatives in this section in an endeavor to secure good machinists. It seems that the automobile builders are taking many machinists from tool plants who find it difficult to replace them. As the number and size of automobile plants are steadily increasing, providing for more skilled help, the question of labor is likely to become a more serious problem.

The demand for traveling cranes is a little better and some of the railroads have placed some substantial orders. It is understood that the Delaware, Lackawanna & Western Railroad has placed the order for its list of traveling cranes issued last June with a prominent Liberty street house. This list, which was one of the largest for electric traveling cranes issued in this territory for some time, covered two 120-ton, two 20-ton, one 30-ton, two 15-ton, one 10-ton and four 1500-lb. cranes. These cranes are to be installed in the new shops at Scranton, Pa. Orders for traveling cranes have lately been placed by the New York Central Railroad. In connection with these orders it is of interest to note that both of these roads will likely come into the market in the near future for considerable machine tool equipment. It is understood that the tools recently purchased by the Delaware, Lackawanna & Western Railroad will not be sufficient to properly equip the new Scranton shops, and as soon as the tools from the present shops are moved into the new buildings the road will probably come into the market for additional machines. The New York Central Railroad, which has lately been building a number of new shops, it is said in the trade, will have to buy a great deal of new machinery.

The Western Pacific Railroad has plans under way for extensive shops to be erected at Sacramento, Cal., to cost in the neighborhood of \$700,000. Plans are as yet only in an embryonic state, but it is understood that the company has practically decided to build on a site which has been selected by a citizens' committee of Sacramento, which offered the company some inducements to locate its shops there.

### Tidewater Portland Cement Company's New Plant.

The Tidewater Portland Cement Company, 115 Broadway, New York, is to erect one of the most modern Portland cement plants in the country at Union Bridge, Md., 45 miles from Baltimore. The contract for the designing and erection of the new plant has been awarded to the Fuller Engineering Company, Allentown, Pa., which will have entire charge of the work. Plans and specifications for the erection and equipment of the buildings are in course of preparation and all the structures will be fireproof, of steel and concrete construction. The plant will have a daily capacity of 3000 bbl. and will consist of a crusher building, 64 x 76 ft.; kiln building, 122 x 224 ft.; stone storage, 76 x 176 ft.; raw mill, 60 x 96 ft.; coal mill, 50 x 96 ft.; coal storage, 64 x 80 ft.; clinker mill and gypsum house, 60 x 144 ft.; stockhouse, 114 x 256 ft.; packing house, 64 x 114 ft.; power house, 60 x 128 ft.; boiler house, 48 x 128 ft.; machine shop, carpenter shop, blacksmith shop and other smaller structures. The plant will be electrically driven

throughout and the machinery, including the crushers, pulverizers, kilns, &c., will be of the most modern type. Contracts for the machinery equipment will be let shortly. Specifications for the machinery will be prepared by the Fuller Engineering Company, which will also receive bids on the equipment, but the purchases will be made by the Tidewater Portland Cement Company. The officers are: President, John K. Tener, member of Congress and president of the First National Bank of Charleroi, Pa.; vice-president, Joseph T. Fanning, president of the Republic Finance Company, New York, which is financing the enterprise; secretary, Owen B. Murphy, New York; consulting engineer, Richard K. Meade, Nazareth, Pa., and consulting geologist, William Bullock Clark of the Johns Hopkins University, Baltimore. The Tidewater Portland Cement Company, which was incorporated last spring, has a capital stock of \$4,000,000 and bonds amounting to \$1,750,000, and in addition to the New York office has a branch office in the Keyser Building, Baltimore, Md.

Purchases of additional machine tools have been made by the American Locomotive Company and it is understood that there is considerable more machinery to be bought. It is estimated in the trade that the company has purchased about \$300,000 worth of machinery in the past month.

The B. C. K. Motor Car Company, York, Pa., recently organized, has taken over the motor department of the York Carriage Company in that city. It will be remembered that the York Carriage Company erected a new building for its motor department and this building will be equipped by the new owner with lathes, drill presses, cold saws, shapers, millers and general tools to manufacture small parts for automobiles other than are manufactured in the company's plant at Bath, N. Y. Some of this machinery has been purchased. The company has taken over the plant of the Kirkham Motor Mfg. Company at Bath, where it will build the engines and transmissions. The machinery recently purchased and installed in the Bath plant, in addition to the former equipment, were two Jones & Lamson turret lathes, Schuchardt & Schutte gear hobbing machines, Eclipse power hack saw, a Greenard arbor press, four drill presses, 12 to 16 in.; an American radial drill, 16 x 24 in. lathes, an American planer, two Westinghouse motors, sensitive drills and other small tools. The officers of the new company are S. E. Baily, president; Joseph D. Carroll, vice-president; J. C. Schutte, secretary; George W. Ryan, treasurer, and J. A. Kline, designer and general manager. The company manufactures the Kline Kar.

The Hayes Run Fire Brick Company, Orviston, Pa., whose plant was recently destroyed by fire, will erect a new fireproof building of brick and steel construction. For its equipment the company will require a 300-hp. engine, a smaller engine and dynamo, belting, shafting, three grinding pans, brick presses, crusher, elevator, conveyor, &c. C. W. Keller is manager.

The John Galvin Metal Stamping Works, 34-44 Hubert street, New York, has purchased a plot of ground on East avenue, between Thirteenth and Fourteenth streets, Long Island City, where it will erect a new plant, 100 x 200 ft., six stories. The new plant will afford the company considerably more room than it has at its present location and will allow for taking care of the increasing demand for its product.

Plans have been made for the installation of a large electric power plant on Spring River, near Joplin, Mo., by Henry L. Doherty & Co., 60 Wall street, New York. The company now owns and operates a plant at this point of 10,500 hp. capacity, which the proposed installation will practically double. The buildings will be of structural steel and brick, and it is hoped to have the new plant ready for operation by January 1. Arrangements are now being made to place contracts for the machinery equipment, which will include two 7500-hp. steam turbine units, direct connected to alternating current generators of equivalent capacity. Sixteen water tube boilers of 750 hp., each built to carry 200 lb. pressure, will also be required. These will be equipped with mechanical stokers and coal conveying apparatus. The current will be generated at 2300 volts and stepped up to 33,000 volts for transmission to the mining district. It is stated that \$2,000,000 will be expended on these improvements, future enlargement of which is contemplated.

The contract for the construction of a hydro-electric development across Paulin's Kill, Columbia, N. J., for the Warren County Power Company, has been awarded to Frank B. Gilbreth, 60 Broadway, New York. The contract covers the construction of a Ransom hollow dam, 30 ft. high and 350 ft. long, as designed by Ransom & Hoadley, Providence, R. I., a reinforced concrete power house, tail race, &c. Meikleham & Dinsmore, New York, are the engineers in charge of the development.

The State Superintendent of Public Works, Albany, N. Y., has awarded barge canal contract No. 53, providing for the construction of lock No. 1 at Phenix, N. Y., on the Oswego Canal, to Scott Brothers of Baldwinsville, N. Y. The contract price was \$160,735.

The Commissioner of Water Supply, Gas and Electricity,

New York, will receive bids until August 18 for two pumping engines, with stand piping, suction and discharge piping and other appurtenances, for the Bayside pumping station at Broadway and Little Neck road, Bayside, Borough of Queens. The successful bidder will be required to maintain the engines, pipe connections and other appurtenances in good condition for a year.

## New England Machinery Market.

BOSTON, MASS., August 10, 1909.

Business maintains its firmness, affected but little by the season and its heat. The works as a whole continue to increase their activity and it will need no great acceleration to bring back entirely normal conditions for all, and in many cases a volume of orders equal to and even in excess of the high point of the last upward wave of production. The passage of the tariff bill may have an effect in quickening the revival of certain lines, but generally speaking the tariff had come to be discounted or disregarded and demand had been stimulated in the natural course of events in spite of the bugaboo of doubt. The settlement of the schedules seems to remove the last remaining hindrance to a return to flush times. Some very good orders were placed with the dealers last week and live inquiries show no diminution. Some of the accumulated stocks are being drawn upon and good sized gaps begin to show on storehouse floors.

Users of machine tools who are planning to increase their shop facilities will be wise if they do not put off placing their orders too long. The country's stock of machinery is not large when it is taken into account that the machine tool production is far below the demand when business is really good, a condition which does not appear to be far distant. It is certain that the experience of three and four years ago will be repeated and that it will become practically impossible for a customer to get anything like early deliveries. As has been stated before, some lines of machinery are already out of the market for immediate shipment, and delivery sheets show the dates of available lots getting farther and farther into the future. Such being the case now, it is not difficult to foresee what conditions will be in the market after some months of prosperous demand. It should be remembered that no great accumulations of stocks resulted from production during the time of stagnation of the machinery market.

The rate war between the Boston & Maine Railroad on the one hand and the Pennsylvania, Baltimore & Ohio and Reading lines on the other, continues without abatement, a third reduction having just been made by the latter group and met by the New England system. The result is much cheaper rates for shipper to Western points, a condition of which every one is taking advantage.

In Providence the transition from poor to good business has been startling. The machinery builders, including the Brown & Sharpe Mfg. Company, have greatly increased their output. The jewelry manufacturers as a whole are having a good trade, though there is a certain "streakiness" in the situation, some houses having felt the revival much more than others, for reasons which the trade is unable to fathom. The agricultural regions of the West are absorbing a large per cent. of the output. The manufacturers of machinery and other equipment used in jewelry making are profiting in a substantial way by the change in the condition of their customers' affairs. The Providence machinery dealers booked many orders out of the increase in capacity of general manufacturing plants, including the textile mills of southeastern Massachusetts.

The Manufacturing Equipment & Engineering Company has removed from Winchester to South Framingham, Mass., having purchased the complete plant of the South Framingham Box Company. Two new furnaces are being installed and some other equipment will be required. The product of this concern is individual sanitary washbowls and other steel shop and factory equipment, the output of which will be greatly increased.

The Leslie Mfg. Company, 17 Medford street, Boston, has begun the manufacture of a new safety razor. The company has bought some machinery, and it is understood in the trade that additional equipment will be added from time to time in the near future.

G. Haarmann & Co., Holyoke, Mass., successors to G. Haarmann & Son, manufacturers of the Haarmann core oven and architectural iron work, have built a new factory and otherwise greatly increased their manufacturing capacity. The firm now consists of G. Haarmann and F. W. Wagner.

B. B. Noyes & Co., Greenfield, Mass., have brought out a new model post drill, designed for use in garage or repair shop. It has a capacity up to 1-in. holes, drilling to the center of a 15-in. circle, and has automatic feed with four changes.

Another step in the proposed consolidation of the Chap-

man Valve Mfg. Company, Indian Orchard, Mass., and the Pratt & Cady Company, Hartford, Conn., was taken last week at a meeting of the stockholders of the former company, who voted favorably on the proposition to issue stock to the amount of \$400,000, to be devoted to the purchase of the Pratt & Cady business and stock to the amount of \$300,000 to provide new working capital and to take care of the floating indebtedness. The latter issue has all been taken by present stockholders of the company, and it is stated at Springfield that subscriptions already received to the \$400,000 issue guarantee the financing of the consolidation. The next move comes with a meeting of the Pratt & Cady Company's stockholders.

H. P. & E. Day, Inc., Seymour, Conn., manufacturer of pens, pencils and hard rubber goods, has increased its capital stock from \$40,000 to \$200,000, the increase being to cover additions to the plant and equipment.

The New England Enameling Company, Middletown, Conn., manufacturer of enameled steel wares, tin and galvanized wares, has increased its capitalization from \$50,000 to \$100,000. The business of the company has grown steadily during the few years of its existence, and frequent additions have been made, and it is anticipated that this condition of things will continue.

It is announced that the Custer Mfg. Company, clothes pin manufacturer, will move its factory from Michigan to Phillips, Maine. A new mill will be built and engines and boilers developing 400 hp. will be installed.

Announcement of enlargements in general manufacturing plants include the following: American Pad & Paper Company, Holyoke, Mass., addition 85 ft. long and four stories; William Skinner Mfg. Company, Holyoke, Mass., silks, large addition; Rice & Hutchins, South Braintree, Mass., shoes, new shop, 240 ft. long; Holyoke Water Power Company, Holyoke, Mass., new mill for the Goetz Silk Company; Rhode Island Soapstone Company, Manville, R. I., new plant on site of present buildings; New England Cotton Yarn Company, New Bedford, Mass., addition to No. 3 Bennett mill to house 70,000 ring spindles and combing machines.

Construction work has been started on the new plant to be erected by the Frank Mossberg Company, Attleboro, Mass., at a cost of \$50,000. The plant will be located near the tracks of the New York, New Haven & Hartford Railroad, and will consist of a main building, 60 x 290 ft., two stories, of brick construction, the first floor to contain the presses and heavy machinery, and the second floor the light machinery, packing and shipping offices and drafting room, and another building, 60 x 150 ft., one story, to contain the engine and boiler rooms and hardening, brazing and forging rooms, equipped with several furnaces and special rooms for japanning and lacquering. There will be a room devoted exclusively to nickel and copper plating. All the machines will be equipped with exhaust fans to take away the dust. Power will be furnished by a steam or gas engine direct connected to a generator, and many of the larger machines will be operated by independent motors.

## Milwaukee Machinery Market.

MILWAUKEE, WIS., August 10, 1909.

Regardless of differing opinions as to the merits of the various schedules adopted, there is general satisfaction here over the final passage and executive approval of the tariff bill. Improvement of trade along many lines will be the immediate result, particularly in the purchase of raw materials, parts and fittings. Specialties of foreign origin, such as governors, valves, gears, escapements, testing and recording apparatus, instruments, tools, metal and mineral compositions, alloys, &c., as well as those of domestic production with which these enter into competition, will also feel the stimulus. In the opinion of most manufacturers and dealers interviewed, prices are bound to advance materially before the end of the present calendar year. Traffic congestion during the fall months is also anticipated, and it is felt that wisdom dictates the early laying in of as large supplies as can be carried, where delays in delivery will be likely to result in serious embarrassment later on.

One very striking indication of awakened business activity in this section is the growing scarcity of first-class draftsmen, mechanics and erecting men, notably such as are required for special work of any character. Some of the leading manufacturers are advertising not only locally but also in papers published in other industrial centers. Even that, however, fails to fill the demand, and consequently overtime lists are increasing.

This is partially due to the fact that most of the orders now being received call for quick delivery, and firms in a position to meet this demand are realizing a premium over offers made by others; so that stock carried during the latter part of the dull period is earning good interest on the investment in addition to clinching sales.

Many Wisconsin manufacturers who discounted the fu-



ture in the manner indicated are pursuing a similar policy now, putting through large orders for standard parts and thereby not only cheapening average costs of production, but also placing themselves in a position to assemble complete machines as quickly as required. This idea seems likely to be worked out in the future more thoroughly than it has been at any time heretofore.

From Merrill, Wis., it is reported that the Merrill Iron Works, which was partially destroyed by fire, will be rebuilt along modern lines.

Plans are being made for the installation of electric drive in the plant of the Northern Milling Company, at Wausau, Wis.

Improvement of the equipment at its power station and pumping plant is contemplated by the Superior (Wis.) Light & Power Company.

A new power house and transmission system for distribution of current to mills down the river is contemplated by the Kimberly-Clark Company, Appleton, Wis.

The Wisconsin Engine Company, Corliss, Wis., is building three vertical blowing engines of the largest size for the River Furnace & Dock Company, Cleveland, Ohio.

Bids on a power plant of about 600 hp., heating and blower system, &c., will be taken by the A. W. Weinbrenner Company, Milwaukee, through the architects, Kirchoff & Rose, for its new factory building.

The Fred M. Prescott Steam Pump Company, West Allis, Wis., has received the order for a 5,000,000-gal. pumping engine, to be installed at Alliance, Ohio.

## Chicago Machinery Market.

CHICAGO, ILL., August 10, 1909.

In marked contrast with the intermittent stops and starts that characterized business in machinery lines during the greater part of the first half of the year, trade is now steadily growing, with every indication of indefinitely maintaining the new levels attained. Considering the extent of inactivity in machine tool factories as late as June 1 it seems a surprising transformation that already emphatic complaints are being made of slow deliveries on some classes of tools. One of the leading local houses has been advised by the factory it represents on milling machines that new orders for high power medium sized tools of this sort cannot be entered for shipment earlier than April of next year. Another Western shop of the same kind is sold up fully as far ahead. While these, perhaps, represent the extremes of the situation at the present rate of demand it will not be long before all makers will be equally oversold. Lathes, drills, shapers and other general shop tools are moving much better, a fact that bespeaks greater activity in all iron and steel working shops. Orders for heavier tools are also more frequent; this is due in part to a wider range of demand from railroads and allied industries, as well as the fuller engagement of capacity in plants making other industrial equipment. Among the inquiries in the market from the latter source last week were two for planers, 48 x 48 in. by 20 ft. and 32 x 32 in. by 20 ft., and a large sized open side milling machine. Some of the equipment required for the Pullman Company's shops has been purchased, but a large portion of the tools for the new steel freight car shops to be erected is yet to be placed. The fact that bids are being taken for the 7000 tons of steel to be used in the construction of this long contemplated improvement foreshadows the early commencement of actual work upon its erection. Fresh evidence is constantly being offered of the astounding development in the automobile industry. The Studebaker Bros. Mfg. Company, South Bend, Ind., has recently announced its purpose to build during the season of 1910 25,000 cars of a given type, which will bring its total output up to about 46,000 machines. The possibilities of the future in this direction can hardly be measured when it is reflected that comparatively little has been done in the manufacture of heavy trucks, the demand for which it is believed will sooner or later equal, if not exceed, that of pleasure cars. Foundries engaged in whole or in part on machinery castings are rapidly filling up, and the prospects for busier times ahead in all machinery lines are extremely bright.

It is stated by an official of the Michigan Central Railroad that work on a new roundhouse to be built at Jackson, Mich., will be started at once. Together with this improvement some additions will be made to the mechanical equipment of the repair shops. Accommodations will be provided for 30 engines, and it is estimated that an expenditure of \$250,000 will be required to carry out the plans.

The Citizens' Lighting Company, La Salle, Ill., will spend \$42,000 for new equipment and improvements within the next few months. These will include a 300-kw. steam turbine with pumps and condensers, 200-kw. alternating current machine, besides other apparatus required for changing the lighting system from direct current to alternating current.

Specifications for the pneumatic pumping plant for the

town of Shirley, Ind., bids to be opened August 23, call for equipment which includes a boiler, engine air compressor and receiver, displacement pump, feed pump, heater, tower and tank, pipe and hydrants, hose and hose carriage, induction motor, automatic starting and stopping compensator and other necessary devices and appliances for installing an air lift in the well with the auxiliary mechanism required for its operation.

## Cleveland Machinery Market.

CLEVELAND, OHIO, August 10, 1909.

Business with all the local machine tool houses continues very good for this season of the year. A fair volume of inquiries continues to come out and the indications now are that the expected dull spell will not be experienced by the machinery dealers this summer. Large manufacturing concerns are buying more liberally than for some time and a large number of orders are coming from almost all kinds of manufacturers that use machine tools. The most of the orders are small ones, but more lists for a fair sized number of tools are coming out than for some time. An improvement is especially noted in the demand for standard tools. While inquiries from railroads are not numerous, there is an improved demand for small lots of tools from that source. Machinery houses are very optimistic over the general outlook and look for a further improvement in the demand in the fall. Manufacturing plants are nearly all running at near their normal capacity now, and additions to a number of plants in this vicinity are being planned that will result in the purchase of additional machine tool equipment. There is also an increase in the number of new concerns that are being formed to engage in metal working lines, and business from this source, which has been rather light, is expected to improve soon. A fair volume of small orders continues to come from makers of automobiles and automobile parts, and a steady business from this source is expected during the balance of the year. The demand for second-hand tools continues very good, but not many good used tools are being offered to dealers.

Machine tool builders and other manufacturing plants continue to put on additional workmen when they can be found, but good machinists are hard to find, and there is also a scarcity of molders and pattern makers. The light gray foundries have enough work on hand to keep them running about full, and several would employ more molders were they able to secure them.

The Superintendents' and Foremen's Club of the Cleveland branch of the National Metal Trades Association has enjoyed a remarkable growth the past year, having added 130 names to its membership in the 12 months. It now has a membership of 1200. The second annual outing of the club will be held some time this month. Members of the Cleveland branch of the National Metal Trades Association will be invited to participate.

The American Steel & Wire Company is in the market for about 15 machine tools for its new Cuyahoga plant, Cleveland, and has the following list out of its requirements: One 32-in. lathe, one 18-in. lathe, one 14-in. lathe, one 12-in. shaper, two 36-in. planers, one 5-ft. universal radial drill, one bolt cutter, two emery grinders, one No. 2 milling machine, one power hack saw, one double motor driven grinder and one hydraulic forcing press.

The Bishop & Babcock Company, Cleveland, will enlarge its plant by the erection of a new building, 55 x 335 ft., five stories, of mill construction. This building will be used for the manufacture of soda fountain apparatus and for the woodworking department. The company will install considerable woodworking machinery. The company reports a decided improvement in orders and that it is now running its plant at practically full capacity.

The B. F. Goodrich Company, Akron, Ohio, which has built several additions to its plant the past year, will further enlarge its capacity by the erection of two additional buildings, one 125 x 400 ft., six stories and basement, and the other 50 x 125 ft., four stories and basement. Both buildings will be of steel construction. Plans are being prepared by the Osborn Engineering Company, Cleveland.

The Ajax Mfg. Company, Cleveland, maker of forging machinery, reports that its volume of orders during July was the largest in any month in two years. The plentiful supply of inquiries indicates that orders will continue good. The company is now running its plant at full capacity.

The New York Central Lines has an inquiry out for three lathes, a 42-in., a 24-in. and an 18-in., for the Chicago, Indiana & Southern Railroad shops at Gibson, Ind.

The South End Machine Company, Akron, Ohio, has been incorporated, with a capitalization of \$10,000, by a number of Akron men, among them Alvin A. Replogle, who was formerly connected with the Replogle Engineering Company, maker of water wheel governors, whose plant was destroyed by fire a few months ago.

It is announced that the International Harvester Com-

pany will erect a new power plant in connection with its Akron, Ohio, works.

With a capitalization of \$50,000, the Canton Brass & Machine Company, Canton, Ohio, has been incorporated by C. W. Kepkinger, J. F. Dougherty, S. W. Weart, A. M. McCarty and H. C. Pontius.

The Wright Wrench Company, now engaged in the manufacture of wrenches at Canton, Ohio, has taken out incorporation papers with a capitalization of \$150,000. The incorporators are James F. Wright, Harry C. Haight, Henry C. Milligan, Thomas F. Turner and M. C. Barbary.

It is reported from Canton, Ohio, that the Timken Roller Bearing Company of that city has entered into arrangements with the Electrical & Ordnance Accessories Company, Birmingham, England, for the manufacture by the latter company of the Timken roller bearings for the English trade. The Timken plant is said to have received a large order for roller bearings from a leading automobile manufacturer in England, the order to be filled from the Canton plant until the English manufacturer of the Timken products is in position to make deliveries.

The Cleveland Machinery Exchange is a new concern in this city that will deal in new and second-hand machinery, and has opened offices at 1529 Rockefeller Building. P. J. Brennan, Sr., formerly manager of Wickes Brothers, Pittsburgh, is manager.

The Cleveland Wire Spring Company reports that it is running at full capacity and that the volume of its orders is double that of a year ago.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, August 10, 1909.

August's improvement has been steady thus far, particularly noticeable in the tool making lines. There is scarcely a tool of the long list of metal and woodworking machinery manufactured in this market that does not show gathering strength in the way of interest and sales. A few shops have reached the abnormal records of 1906-1907 in point of time and forces employed, and all are adding men and increasing time. The chief difficulty with which manufacturers have to contend just now is the employment of skilled mechanics. The rise of the automobile, the phenomenal growth of the industry in the Central and Central Northern States, has drawn heavily on the ranks of tool workers, not only noticeable in the number attracted away from the local shops, but in the pay, the automobile establishments, because of pressure from the dealers, paying what some tool makers are pleased to denominate prohibitive wages.

The Cincinnati Metal Trades Association Employment Bureau is overrun with requests from shops for skilled men, and the demand is in excess of the supply.

Lathes have forged to the front again. Dealers have begun to stock up on this popular tool, the most popular sizes ranging from the 15-in. to the 22 and 24 in. In this connection the sales record of Schumacher & Boye is interesting, this concern booking sales of 65 machines between August 1 and 6, in sizes ranging from 18 to 36 in., six of the latter. All the shops building lathes report good business, much of it coming direct and from widely divergent points, showing the improvement to be general in all parts.

The Cincinnati Planer Company reports for July the best 30-day record for two years. It is increasing time and forces and making preparations for the heavy business which it feels is assured within the next six or eight months, and by which time it will be comfortably installed in its new home in the Oakley District.

The R. K. Le Blond Machine Tool Company also belongs in the list which has made special improvement within the past few months. This company made particularly good use of the period of depression in developing entirely new machines and is just now on the eve of making some important announcements. Men have been added in every department and some additions made to the office force.

The jobbing foundries continue to increase their melts in size and frequency. The larger foundries are making some heavy castings for the tool manufacturers, indicating that some of the heavier types which have not yet shown activity are to be turned out, anticipating the buying of railroads and car shops, which must soon find it necessary to replace and add machines to take care of the rapidly increasing traffic requirements.

Dealers in machine tools are all optimistic and are beginning to stock up on standard sizes and makes.

Second-hand machinery is in good demand, but prices have increased considerably and negotiations by dealers for this class of stock to supply customers are met on the part of shop people with a considerable show of independence, indicating clearly the trend of the times.

The National Steel Sheet Company, Mansfield, Ohio, has been reorganized and will henceforth be known as the National Rolling Mill Company. The new officers are W. M.

Blecker, president and general manager; Frank A. Bare, secretary and treasurer; E. E. Mack, Canton, Ohio, first vice-president; C. V. Morarity, second vice-president; H. L. Reed, Harry Irwin, M. C. O'Brien and the foregoing constituting the Board of Directors. A new blue steel furnace has recently been installed and two new stands of rolls will soon be added. A galvanized steel roofing plant is in prospect and the force of men is reported to have been increased considerably.

The Joliet (Ill.) Steel Car Company, incorporated under the laws of Delaware, has purchased 60 acres of land in the town of Channahon, Ill., on which it expects to build a large plant for the manufacture of steel cars.

S. C. Schmidt, vice-president of the Central Foundry Company, has ordered extensive improvements to the Vincennes, Ind., plant, among which will be a system of shower baths for employees.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., August 10, 1909.

While there has been no very heavy volume of business originating in this immediate territory, merchants and manufacturers report a somewhat better aggregate in total sales. Now that the tariff matter has been finally disposed of less hesitancy will, it is believed, be displayed in certain directions in placing orders. The broadening of general business has had a stimulating effect on the market, and those not dependent on this immediate territory, which has always been slow in its recovery from a period of depression, are taking quite a good volume of business from other districts. The railroads are making heavier purchases of rolling stock and motive power. The local locomotive builder has taken quite an increased volume of new business, while the Pennsylvania Railroad has placed orders for 8000 cars for replacement of those unfit for service. As far as machine tools are concerned, the railroads continue to be rather light buyers. Some scattered inquiries for a few tools here and there are noted, but nothing of importance has yet developed. Manufacturers are better employed, although most orders are individually small. In some instances plants are now operating at a much better rate, and if business continues to improve machine tool builders will look forward with considerable encouragement to the early possibility of running to full capacity. Inquiries have been in somewhat better volume, but are not large, the greatest demand being for tools of the medium size, which are taken usually for replacement and minor extension of buyers' equipment. Deliveries can be had promptly in all except a few lines, milling machines of some makes probably being the hardest to obtain, except on long time deliveries.

No particular improvement is seen in the demand for tools for export, particularly those of the standard types. A fair inquiry for special equipment is noted.

In second-hand tools business is largely of a day to day character and is of a very general nature. Second-hand boilers and engines are not very active, although a decided betterment is reported in power equipment of the heavier class.

The volume of business coming to the iron and steel foundries appears to be gradually expanding. Quite a tonnage of new business has been taken, and founders are more encouraged. The crucible steel castings plants are fully engaged, while those making heavy steel castings are better employed.

Charles W. Denny has the contract for a new machine shop and garage, to be erected at 3430 Chestnut street, for the Franklin Motor Car Company.

Councils of Collingwood, N. J., have adopted resolutions authorizing the construction of a municipal water plant. The proposed resolutions will have to be approved by vote of the citizens. The plans for the work have not yet been prepared.

It is reported that the proposed sewers and sewage disposal plant to be constructed at Beverly, N. J., will be from plans prepared by Clyde Potts, 17 Battery place, New York. E. N. Perkins, clerk of councils, Beverly, N. J., can give information.

The Wilbraham-Green Blower Company, Pottstown, Pa., reports having booked a very fair share of business recently, particularly for blowers for general purposes, such as foundries, filtration plants, &c. Orders for quite a large number of gas exhausters have also been taken, and the outlook for the balance of the year is considered exceptionally bright.

The New York Shipbuilding Company, Camden, N. J., is quite busy. It is engaged in constructing four torpedo boat destroyers and two first-class battleships, as well as four merchant vessels of considerable size, while the prospects for obtaining contracts for several more are very good. From inquiries received, an increased demand for vessels of different types is anticipated.

Plans are being considered by the Chambersburg, Green-



castle & Waynesboro Street Railway Company for the construction of 12 miles of road, connecting Chambersburg and Shippensburg Pa. Plans are also being considered for an extension of the road from Pen-Mar, Md., to Blue Ridge Summit. A. C. Shyrook, Waynesboro, Pa., is chief engineer.

The Betts Machine Company, Wilmington, Del., is quite busy. Full time with a full working force is being maintained. Inquiries are comparatively good, and some very satisfactory orders have recently been booked, including, among others, one for two large double drive boring mills for the Mesta Machine Company, two large planers for the Standard Steel Car Company and 45 large boring mills for the Inter-Ocean Steel Company, Chicago Heights, Ill.

The R. S. Newbold & Son Company, Norristown, Pa., is running its plant at about 80 per cent. of its capacity. It has taken recently some satisfactory orders, including a very large one for Canada and another for two patent pipe cutting off machines for Germany. This company is also completing a large plate straightening machine for the new plant of the United States Steel Corporation at Gary, Ind. A considerable increase in inquiries is reported, and the outlook for the future is believed to be very bright.

The Espen-Lucas Machine Company notes a material improvement in business in the last few weeks, a greater number of orders having been booked, covering cold saw cutting off machines of various types, boring machines and milling machines.

The Baldwin Locomotive Works has taken orders for 35 locomotives for the Great Northern Railroad, 25 being of the ten wheel passenger type and ten of the Mallet type of freight engines. The Northern Pacific has also placed orders for 17 Pacific type engines, while the Burlington has ordered five of the Mallet type. Inquiries are in hand from a number of other railroads, as well as from industrial concerns, and it is believed that these inquiries will rapidly develop into orders. Considerable work in the way of extension, both at Eddystone and Philadelphia, is under consideration, but a final decision in the matter is not expected to be reached for at least 30 days.

## Government Purchases.

WASHINGTON, D. C., August 10, 1909.

The Isthmian Canal Commission will receive bids until August 18, Circular No. 528A, for a pumping plant, including two turbine pumps, two induction motors, one 5-ton hand traveling crane, piping, meter and accessories.

Bids will be received until September 7 at the Treasury Department, Washington, for the mechanical equipment for the United States Post Office and Court House at New Orleans, La., including boiler plant, heating and ventilating system, electric generating system, vacuum cleaning system, &c.

The following bids were opened July 16 for two air compressors for the Nobska Point Light Station, Boston, Mass.:

American Air Compressor Works, New York, \$1090, accepted; De La Vergne Machine Company, New York, \$1348; Frank E. Davis, Boston, Mass., \$1480; George H. Sampson Company, Boston, Mass., \$1760.

The following bids were opened August 3 for machinery for the navy yards:

Class 1, two electric jib cranes—Bidder 5, Alliance Machine Company, Alliance, Ohio, \$8510; 10, Brown Hoisting Machinery Company, Cleveland, Ohio, \$5300; 122, Niles-Bement-Pond Company, New York, \$5300; 195, Whiting Foundry Equipment Company, Harvey, Ill., \$3350 and \$3600; 213, Henshaw, Bulkeley & Co., San Francisco, Cal., \$510.

Class 11, gasolene engines—Bidder 36, Compressed Air Machinery Company, San Francisco, Cal., \$1356; 61, Ferro Machine & Foundry Company, Cleveland, Ohio, \$858; 63, Fairbanks, Morse & Co., New York, \$980.58; 65, Fulton Engine Company, Erie, Pa., \$1179.09; 142, Regal Gasoline Engine Company, Caldwell, Mich., \$1330.20; 185, Vermilye & Power, New York, \$1141.98.

Class 71, one fuel oil furnace—Bidder 13, William Best American Caloric Company, New York, \$7428; 93, Kenworthy Engineering Company, Waterbury, Conn., \$857.80; 207, Mercks Fuel Oil Equipment Company, Norfolk, Va., \$492.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened August 2, Circular No. 523:

J. B. Kendall Company, Washington, D. C., class 35, hydraulic screw punches, \$338.  
Tucker Tool & Machine Company, New York, class 36, two tool grinders, \$116.75.

Under bids opened June 21, Circular No. 514, for machinery for the Isthmian Canal Commission, Manning, Maxwell & Moore, New York, have been awarded class 2, two 200-gal. pumps, \$250.

Under bids opened July 6 for supplies for the naval station at Annapolis, Md., the Babcock & Wilcox Company, New York, has been awarded class 101, four water tube boilers, \$4000.

Under bids opened July 19, Circular No. 520, for supplies for the Isthmian Canal Commission, the Jarecki Mfg. Company, Erie, Pa., has been awarded class 5, two pipe machines, \$1811.

Under bids opened July 27 for supplies for the navy yards, the Pacific Tool & Supply Company, San Francisco, Cal., has been awarded class 11, two cold metal saws, \$320.

## Pennsylvania Railroad Improvements in the Central West.

The Pennsylvania lines west of Pittsburgh have just started work on some very important double tracking and grade revision, designed especially to facilitate the movement of traffic on the Pittsburgh, Chicago, Cincinnati & St. Louis Railroad between Columbus and Chicago on the one hand, and between Columbus, Indianapolis and St. Louis on the other. The first of these undertakings involves the double tracking and grade reducing of 99 miles between Horatio and Onward. These improvements have been rendered necessary by the development of the great plant of the Indiana Steel Company at Gary, Ind., where a very large amount of coal and coke from the West Virginia coal fields is used. The cost of this undertaking will be about \$3,000,000. Grading will be pushed as rapidly as possible this year and it is expected that the tracks will be in use by the summer of 1910. With the completion of this work the Pennsylvania lines west of Pittsburgh will have an alternative double track road between Pittsburgh and Chicago, as the entire line is already double-tracked, except between these two points and about six miles through Piqua, Ohio.

To facilitate the movement west of Columbus, destined for Indianapolis and other points for the Southwest, the 63 miles between Richmond and Irvington, Ind., are to be double-tracked and all grades reduced, at an estimated cost of \$4,000,000. On the line between Indianapolis and St. Louis there are now 36 miles of double track, so that for the total distance between New York and St. Louis it will be possible to travel for 817 miles on a railroad having from two to six tracks. It is expected that this will very greatly facilitate the movement of both freight and passenger trains.

## Customs Decisions.

### Wire Rat Traps.

After almost 12 years of litigation, importers of wire rat traps have won a victory, the Board of United States General Appraisers having decided that the claim of the Burditt & Williams Company, Boston, which has figured as a test, must be sustained. The question has been, What is the value of the wire that is used in the manufacture of the traps? During much of the litigation arising since the Dingley tariff was enacted in 1897 a conflict of testimony has arisen between the government and importers regarding the value of the wire materials. The controversies have been frequent, owing to the various kinds of wire used in the making of the traps, it being necessary in practically all the cases to prove the facts in the particular cases in dispute.

In the case just decided by the Board of Appraisers duty was assessed at 40 per cent. ad valorem in addition to a specific duty of 1¼ cents per pound. The Burditt & Williams Company maintained that lower duty should be granted on the ground that the rat traps under consideration should be admitted at the rate of 2 cents per pound, plus 1¼ cents per pound. General Appraiser Fischer, who writes the decision for the board, holds that the importer has proved the claim and that the protests must be sustained.

The Isabella Connellsville Coke Company has commenced to spend the \$500,000 appropriated for the development of its property on the Monongahela River near Brownsville, Pa. Two shafts have been started and the material is on the ground for 40 dwellings. When these are completed, work on another lot of houses will be commenced. Work on the railroad yards is being pushed rapidly, and 500 new coke ovens are to be commenced as soon as the tracks are laid and it is possible to ship material. When all is completed, the Isabella Company will have three large coking plants, two near Arnsburg Station, on the Monongahela Railroad, and the other on the Brush Run branch of the same line. This will make a new settlement in that region of between 2000 and 3000 persons.

# HARDWARE

**I**N the disposition to take better care of their freights retail merchants should have the heartiest co-operation of those from whom they purchase goods, whether jobbers or manufacturers. How to aid them in this matter is a practical question, the solution of which will contribute to the efficiency of the existing methods of distributing goods, which is now done so largely by the jobbers through the retail merchants. While the jobbers have made great improvements in their methods and are serving the retail trade better than ever before in many ways, the freight department has apparently been overlooked, with the result that it has not been brought within the range of the reform and improvements which so generally characterize jobbers' methods. An illustration of inattention to the interests of their customers is found in the difficulty which many retail merchants experience in getting from jobbers proper bills of lading with invoices; that is, bills of lading with accurate weight of the goods and the rate of freight which according to law is to be paid. There is also an opportunity for the large shippers to give more practical attention to the matter of classification and other details and thereby to furnish their customers with information which will be of assistance to the latter in the management of their freights, both as regards their purchases and the proper checking up of freight bills. There is said to be a good deal of difference in the practice of the jobbers in this respect, some of them doing little or nothing to aid retail merchants in the care of their freights, but rather encouraging them to let this part of their business run along in a slipshod and unbusinesslike manner. We respectfully submit that it is up to the manufacturers and jobbers alike in their relations with retail customers to stimulate the movement toward better methods in this field.

**N**OW that the tariff revision proceedings have been terminated by the signing of the Payne bill by the President, it is worthy of note that in this instance traditions and precedents have been broken in at least one respect. On previous occasions when a revision of the tariff has been undertaken a distinct and sometimes serious interruption to business has occurred. Manufacturers and merchants curtailed their operations to await the readjustment of duties lest the outcome might find them with stocks of materials or finished products on which heavy losses would have to be taken. Capitalists held new undertakings in abeyance in the expectation that costs of construction might be lowered by reductions in duties. Even when the revision was more likely to be upward than downward, consumers waited until the result was assured to cover their requirements. This year conditions have been altogether different. If the tariff revision proceedings have caused any interruption to business, it has not been perceptible in the iron and hardware trades. In point of fact, these trades have been growing in vigor from the time when the tariff bill was first reported to the House of Representatives, with its sharp reductions in many duties directly affecting iron, steel and hardware. Without entering into any analysis of the probable causes of this apparent indifference to what on previous occasions of tariff revision would undoubtedly have checked enterprise, it is sufficient to note and record the fact that consumers of iron, steel and hardware have ignored the action of Congress on this

matter as if convinced that it would not prove a factor of any importance in shaping the course of prices on domestic products. The new tariff may have its faults and imperfections. Its rates may be too low from the viewpoint of some interests and too high to suit the opinions and preferences of others. But now that the work of revision has been ended, it is a matter of great satisfaction, not only that in its finality it seems to be acceptable to business interests generally, but also that in its tedious progress through Congress, covering a period of five months, it exerted no depressing effect. Nevertheless, the business interests of the entire country cannot but feel greatly relieved that this important question has been definitely settled. This was one of the uncertainties which confronted the trade at the opening of the year. Its disposal assists in clearing the business atmosphere.

## Condition of Trade.

A more confident tone prevails in trade circles. There are experienced merchants who still want to be shown, and it is true that there are lines other than iron and steel which lag, and so far have not felt the forward impulse observable in some of the metals, but there appears to be a diminution in the ranks of the doubters. While the new tariff act is now a law and in actual operation, it is obviously too soon to note much change other than the stimulation coming from the fact that the suspense is over. The tide of business operations, which has been running strong for some time, may be expected to rise still higher. A constituent company of an important interest had believed that its shipping limit, physically, was 160,000 tons of material per month, but its May and June shipments exceeded anything in its history, and there were actual shipments of 186,000 tons in one of the two months. Distributors of finished products in many instances are apparently not embarrassed to supply goods as yet, but the movement in partially manufactured material and in some lines of finished products is well under way. Complaints are being made in some channels regarding nondeliveries, and the opinion is expressed that for quite a period in the near future the problem will be more a question of deliveries than price. Be that as it may, the railroads, it is agreed, are purchasing liberally and endeavoring to get into a position to furnish all necessary transportation facilities. With some manufacturers orders are coming in satisfactorily and a feeling of confidence is expressed. There is significance in the fact that customers are asking for the acceptance of orders for future delivery, in contrast with nearly two years of buying for pressing necessities only.

### Chicago.

Business in nearly all Hardware lines is steadily increasing in volume. In some instances manufacturers are beginning to fall behind on deliveries, and, while this is not a generally prevalent condition, the course of industrial events points strongly to the early resumption of activity on a scale equal to if not surpassing that of 1906 and 1907. In view of the remarkable agricultural prosperity of the country the demand for various kinds of Wire Fencing, which will set in soon, is expected to be unusually heavy. The same will doubtless be true of many other lines directly affected by the purchasing power demand from this source. Realizing the upward tendency of values, which is becoming more and more pronounced, buyers are no longer apathetic about their



future requirements, but are endeavoring to fortify themselves against what seems to be a period of extraordinary activity and higher prices. A number of large consumers of heavy staples, such as Bolts, Rivets, Sheets, &c., have been seeking to place extensive contracts for forward deliveries at current prices, but as a rule manufacturers are not anxious to load up far in advance at the present market level when prices, though not at the moment advancing, are plainly on the upturn. According to all reports those lines that have actually been pegged up a notch are being firmly held at the new prices, a fact that reflects the soundness of underlying conditions. Now that the end of the vacation season is approaching the full energy of trade forces will soon be behind the onward movement to carry it forward with increasing momentum, and, while the returning wave of prosperity with its attendant benefits is contemplated with satisfaction after the trying period of commercial and industrial depression through which the country has passed, too rapid a pace is neither courted nor desired. Already in some of the heavier lines of iron and steel products annoying delays in the execution and shipment of goods are being experienced. The production of steel making pig iron has again reached almost the previous high record in October, 1907. There is, however, no immediate danger of general congestion in factories making articles comprised in Hardware stocks and there is considerable room for expansion before the normal limit of production is reached. Altogether the outlook is full of encouragement and the horizon is at last cleared of clouds of apprehension which for months have obscured the view.

### NOTES ON PRICES.

**Wire Nails.**—It is not expected that the new demand will be very heavy until deliveries have all been made on orders placed at the low prices ruling in May. At present the mills are busy filling these orders, and some mills are temporarily unable to fill carload orders complete owing to broken assortments of stock. Prices are well maintained, and quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....	\$1.80
Carload lots to retail merchants.....	1.85
Less than carloads to jobbers.....	1.85
Less than carloads to retail merchants.....	1.95

Galvanized Wire Nails are quoted at \$2.85, base, f.o.b. Pittsburgh, in carload lots, with regular advances for sizes.

**New York.**—Since the influx of orders immediately preceding the last advance in the price of Wire Nails business has quieted down to some extent. The delay in shipments from mill has resulted in broken assortments in jobbers' stocks, which is causing some inconvenience. Wire Nails are held at \$2, base, in small lots at store.

**Chicago.**—New buying is light, but specifications against contracts placed at the low prices ruling in May and later are being supplied in liberal volume. Until these shipments have been completed it is hardly expected that a heavy buying movement at the new level will begin. Much depends of course upon the rate of consumption. If it should prove as great as the prosperity of the country seems to warrant, fall orders will be heavy. What new business has been placed has been entered at the ruling prices, which are as follows: \$1.98, Chicago, in carloads to jobbers, and \$2.03 in carloads to retailers, with an advance of 5 cents for less than carloads from mills.

**Pittsburgh.**—There is very little new business being placed in Wire Nails on account of the recent advance in price, but the movement on old contracts continues heavy and the great bulk of this business will be worked out of the mills by October 1. There is still some material due on the \$1.60 price, but the greater part of the business on books is at \$1.70. The new price of \$1.80, base, is being strictly adhered to, and we quote the market at this figure, f.o.b. Pittsburgh, in carload and larger lots.

**Cut Nails.**—A fair amount of business is being received by the mills, mostly for nearby requirements. General quotations are on the basis of \$1.75, f.o.b. Pittsburgh, this price sometimes being shaded 5 cents per keg on desirable orders. Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails in the Western market, but in the East this differential is not observed. Galvanized Steel Cut Nails are quoted at \$2.85, base, f.o.b. Pittsburgh, in carload lots, with regular advances for sizes.

**New York.**—Requirements for Cut Nails in the local market are of moderate proportions. Nails are held at the base price of \$2 per keg, in small lots at store.

**Chicago.**—Increased demand for Cut Nails from the car shops has been added to the growing consumption in other industries. The market, in fact, is broadening to an extent that is plainly reflected in a more rapid depletion of jobbers' stocks and heavier mill shipments. Prices are decidedly firmer, and some producers are asking higher prices. The minimum prices obtainable are as follows: In carloads, to jobbers, Steel Cut Nails, \$1.88; Iron Cut Nails, \$2.03.

**Pittsburgh.**—A fairly good business is being done in Cut Nails, but there is no great prospect of an advance and the buying is not far ahead. The market is regularly quoted at \$1.75, base, f.o.b. Pittsburgh, for Steel Cut Nails, but \$1.70 is occasionally done on attractive business. Iron Cut Nails command a premium of from 5 to 10 cents over Steel Cut Nails.

**Barb Wire.**—The heavy orders placed at the low prices ruling in May seem to have postponed buying at this time, when new business is usually expected, particularly from the South. Mills are, however, busy filling orders booked earlier in the season. Prices are maintained and quotations are as follows, f.o.b. Pittsburgh:

	Painted.	Gal.
Jobbers, carload lots.....	\$1.80	\$2.10
Retailers, carload lots.....	1.85	2.15
Retailers, less than carload lots.....	1.95	2.25

**Chicago.**—There is not much new buying, and the mills are now working mainly on specifications against existing contracts, which are being freely offered. Fall orders are slow in coming out, especially in the South, where buying usually begins by August 1 or earlier. The heavy purchases made at the low prices offered in May have doubtless sufficed to cover present requirements, but an active demand is expected to develop a little later. The market is firm at the new level, which we quote as follows: To jobbers, Chicago, carloads, Painted, \$1.98; Galvanized, \$2.28. To retailers, carloads, Painted, \$2.08; Galvanized, \$2.33; retailers, less than carloads, Painted, \$2.13; Galvanized, \$2.43. Staples, Bright, in carloads, \$1.98; Galvanized, \$2.28; carloads, to retailers, 10 cents extra, with an additional 5 cents for less than carloads.

**Pittsburgh.**—The mills are well filled with business taken at old prices, while there is little new business coming in at the advance. Shipments are about up to normal for this time of year, which is always a dull season. We quote Galvanized Barb Wire at \$2.10; Painted, \$1.80 per 100 lb. in carload and larger lots, f.o.b. Pittsburgh, subject to usual terms.

**Fence Wire.**—The demand for Wire Fencing is reported good by manufacturers, and it is expected that the demand for Wire to fill requirements will be large later in the season. Mills are engaged at present in making shipments on orders taken earlier in the season. The market is firm at the following quotations per 100 lb. to jobbers in carload lots as follows, on a basis of \$1.60 for Plain and \$1.90 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.....	0 to 9	10	11	12	12½	13	14	15	16
Annealed.....	\$1.60	1.65	1.70	1.75	1.85	1.95	2.05	2.15	
Galvanized.....	1.90	1.95	2.00	2.05	2.15	2.25	2.35	2.75	

**Chicago.**—Not many new orders are being booked, but the mills are busily engaged in the execution and shipment of contracts placed prior to the recent advance. A good demand for Fencing is reported, and manufacturers are urging early shipments of their specifications to meet current requirements. It is believed that further buying

of considerable volume will be required to meet the demands of the trade, and a movement of this kind is looked for a little later in the season. Prices are firm at the ruling quotations, which are as follows: Carloads, to jobbers, \$1.78, base, f.o.b. Chicago.

**Pittsburgh.**—Shipments continue to be made freely on old contracts, at \$1.40 and \$1.50, the bulk of the business being at the higher price, while on new business the new price of \$1.60 is strictly adhered to. We quote Plain Wire at \$1.60 and Galvanized at \$1.90 per 100 lb. in carloads and larger lots, f.o.b. Pittsburgh, subject to usual terms.

**Empty and Loaded Shells.**—The Union Metallic Cartridge Company, Bridgeport, Conn., the M. Hartley Company, 313-315 Broadway, New York, sole representative, announces that its empty paper Shotgun Shells will hereafter be supplied in the same brands as those sold loaded; the former names Union, Challenge, Monarch, Magic and Acme being discontinued. Three names will be used hereafter instead of five: Arrow, taking the place of Acme and Magic; Nitro Club, taking the place of Challenge and Monarch, and New Club, taking the place of Union. Nitro Club Shells were formerly sold empty under the name of Challenge, for bulk smokeless powders, and Monarch, for dense smokeless powders. Arrow Shells were sold empty under the name of Magic for bulk smokeless powders, and Acme for dense smokeless powders. The Union brand will hereafter be called New Club, the same as those sold loaded. There have been no changes in the prices of the goods.

**Window Glass.**—A meeting was held last week by representatives of the manufacturers and of the National Window Glass Workers to decide upon the wage scale for the coming season. No agreement was reached and an adjourned meeting was decided upon for the 10th inst. According to reports, the workers asked for an increase over the scale which has been in effect, while the manufacturers offered a scale which would figure a reduction on that now in force. Reports received from some sections of the country reflect a better demand with a resulting strengthening of prices. The New York market is dull, with a tendency toward less than regularly quoted prices. Prices recommended by the Eastern Window Glass Jobbers' Association, from jobbers' list, October 1, 1903, for territory east of the Alleghany Mountains are as follows: New England States, from jobbers, Single, 90 and 35 per cent., and Double, 90 and 40 per cent.; New York State, Single, 90 and 35 per cent., and Double, 90 and 40 per cent.; New York State, factory shipments, Single, 90 and 45 per cent.; Double, 90 and 50 per cent.; some portions of Pennsylvania are accorded discounts 5 per cent. better than other States; in the Southern States discounts vary from 90 and 25 to 90 and 40 per cent. on Single and from 90 and 30 to 90 and 45 per cent. on Double, from jobbers.

**Rope.**—There is nothing new to report in the Cordage market, demand being comparatively light and general quotations unchanged. The following quotations represent the market for moderate quantities: Pure Manila of the highest grade,  $8\frac{1}{4}$  to  $8\frac{1}{2}$  cents per pound; lower grades of Pure Manila,  $\frac{1}{4}$  to  $\frac{1}{2}$  cent less than the foregoing quotations. Pure Sisal of the highest grade,  $7\frac{1}{2}$  to  $7\frac{3}{4}$  cents per pound; base, Commercial grade,  $6\frac{1}{2}$  cents per pound. Rove Jute Rope,  $\frac{1}{4}$  in. and up, No. 1, is quoted at 5 to  $5\frac{1}{2}$  cents per pound.

**Binder Twine.**—The Twine market has been remarkably even and free from open cuts on the regular schedule of prices this season. No doubt prices have been shaded in some instances, but the strong Fiber market and fine crop outlook have held Twine prices steady. Since harvesting commenced, though somewhat later than usual, demand has been good, and, owing to heavy wheat and oat crops, has generally been larger than last year. In some sections of the country the hay crop has been lighter than usual, and it is anticipated that there will be a larger demand for Twine for corn binding. Reports indicate that there will be comparatively little Twine carried over by merchants. Schedule prices are as follows:

	Cents per lb.
Sisal .....	$7\frac{1}{2}$
Standard .....	$7\frac{1}{4}$
Standard Manila (550 ft.) .....	8
Manila (600 ft.) .....	$8\frac{1}{4}$
Pure Manila .....	10

Carloads are  $\frac{1}{4}$  cent less; 5-ton lots,  $\frac{1}{8}$  cent less; fall terms; central delivery. For delivery at Missouri River and Northwestern distributing points  $\frac{1}{4}$  cent is added.

**Linseed Oil.**—The market is in a badly demoralized condition, owing to the different prices which are quoted, resulting in a very light business. Large buyers feel no confidence in the situation and are consequently covering present requirements only. Carload prices, based on Western Raw, are reported from 57 down to 53 cents per gallon, with intimations that something better is available. On the same basis, 5-bbl. lots are reported from 58 cents down, according to seller. Boiled Oil is 1 cent advance per gallon on Raw.

**Spirits Turpentine.**—The market has been subject to the fluctuations, which have characterized it for some time, but has now reached the highest figure since it began a downward course, something over a year ago. The strength of the market has resulted in a more liberal placing of orders, although demand is not heavy. The New York market is represented by the following quotations: Oil Barrels, 53 to  $53\frac{1}{2}$  cents; Machine Made Barrels,  $53\frac{1}{2}$  to 54 cents per gallon.

### Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers catalogues, price-lists, quotations, &c.*

**REQUESTS** for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM GEO. J. HOOSE & SONS in Atlanta, Ill., Mr. Hoose has taken into partnership with himself his two sons, M. M. and O. G. Hoose. The firm handles Hardware, Stoves, Cutlery, Pumps, Paints, Buggies, Farm Machinery and Automobiles.

FROM EBERT, GAMBLE & Co., who have recently engaged in business in Scott's Bluff, Neb., carrying Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Paints, Oils, Sporting Goods.

FROM CONSOLIDATED SALES COMPANY, 601 Swank Building, Johnstown, Pa., which is opening a sales agency at that point.

FROM R. T. WARNER & SON, Malvern, Chester County, Pa., who have just completed a brick store building, and will on September 1 open a general Hardware and Housefurnishing business, handling also Automobiles and Electrical Supplies.

FROM CRUMRINE & FISHER, Lima, Ohio, who have embarked in the general Hardware and House Furnishings business.

FROM H. D. PEGG HARDWARE COMPANY, handling Shelf and Heavy Hardware, which has opened a store at Metamora, Ohio. A plumbing and tin shop will also be conducted.

FROM BOWEN HARDWARE COMPANY, successor to O. Matteson, Binghamton, N. Y.

FROM W. R. JACOBS, who have purchased the Hardware business of Thomas Bros. in Long Island, Kan.

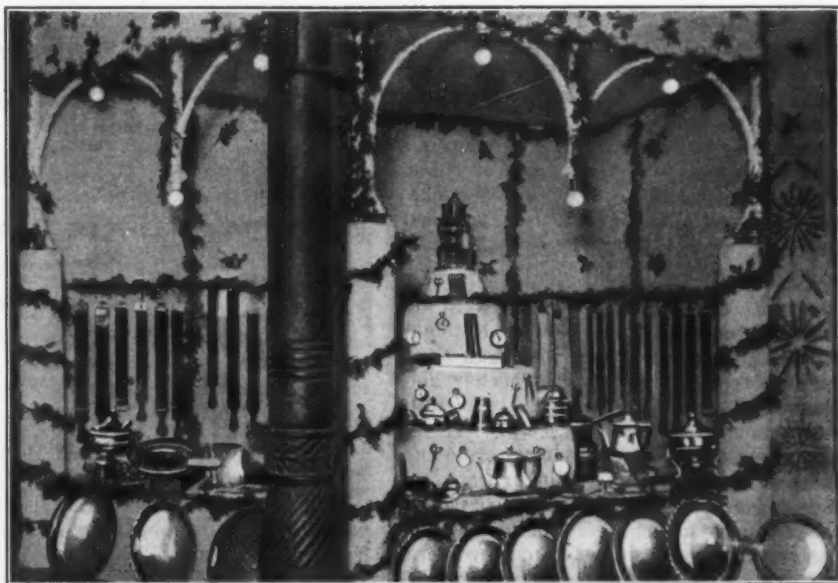
FROM HUNT & POUNDSTONE, organized with a capital of \$10,000, and succeeding J. M. Poundstone & Son, Los Angeles, Cal., dealers in Hardware, Stoves, Paints, Oil and Glass.



## A Michigan Display of Nickeled Ware.

### Revolving Pyramid Centerpiece.

THE show window illustrated herewith had a frieze at the top near the glass, below which were arches. The skeleton frame of the frieze and other straight work were constructed with  $\frac{7}{8}$  x  $1\frac{1}{2}$  in. pine strips. The arches were formed with barrel hoops and the three pillars of bent sheet iron, 8 in. in diameter. The color scheme was white and green, the curves and pillars being wound with cheesecloth, while frieze, background and pyramid were covered plain and all decorated with forest greens.



*A Show Window with White and Green Decorations, a Revolving Pyramid, Displaying Nickel Plated Goods, Razor Strops, Cutlery, &c.*

The goods displayed included Nickel Plated Goods, Razor Strops, Cutlery, &c.

About the center of the window floor was a revolving pyramid 5 ft. in diameter at the base and 3 1-3 ft. high, constructed of  $\frac{1}{2}$ -in. pine lumber. A platform was built in the window, the top of which was 14 in. above the floor, to accommodate an electric motor underneath. In Fig. 2 is shown the arrangement of the pyramid and the mechanism that operated it. The motor was 1-15 hp. and was run from an electric light wire controlled by a switch. The motor capacity was about 1500 rev. per min., so that it was impracticable to connect directly with the pyramid. Three speed reductions were obtained by belting the motor to successive pulleys of the proper size leading to the pyramid rod, causing the display to revolve approximately 60 times per minute.

This display was made in the store of Jno. C. Fischer, Ann Arbor, Mich., by Geo. Fischer and Gale Mullison, two of the clerks, with the collaboration of the stenographer, Miss Gladys Tupper. Doubtless much of the effectiveness of the exhibit was due to the young woman's supervision of the decorations.

Having secured a centrally located site, the Kerr Hardware & Implement Company, Ltd., Boise, Idaho, is about to let contracts for the erection of a six-story building which it will occupy in part as a Shelf and Heavy Hardware and Farm Machinery store and warehouse. The company will occupy the three lower floors and basement and the three top floors will be leased as office rooms.

### AMONG THE HARDWARE TRADE.

The Covina Hardware Company, Covina, Cal., has lately opened up in business handling a general line of Hardware as well as Stoves, Paints, Oils and Glass. S. P. Twomey and H. C. Diller are the proprietors and H. G. Ravenscroft, manager.

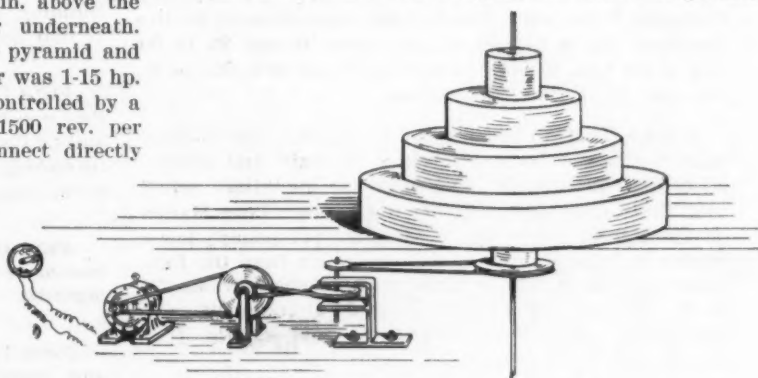
Wallace & Slead have succeeded to the business of Wallace & Sons., Overton, Neb., handling Shelf Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Agricultural Implements, Paints and Oils.

H. B. Wilson has purchased the Hardware business of Thomas H. Milligan & Co.—Thomas H. Milligan and H. B. Wilson—in Newport, Pa., and will conduct it in his own name.

Following the death of Myer Carl on May 17, in

What Cheer, Iowa, his business has passed into the hands of Ella H. Carl, who will continue it under the style of the Myer Carl Hardware Company.

The Sinsel Hardware Company has been incorporated



*Arrangement of the Revolving Pyramid and Mechanism Operating It.*

in Cameron, W. Va., with a capital stock of \$15,000. The company carries Hardware, Stoves, Tinware, Paints and Oils, Sporting Goods, China, Cut Glass, Glassware, &c.

The Terhune-Nixon Company, Rome, Ga., has changed its name to Nixon-Smith Hardware Company and is doing a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Agricultural Implements, Sporting Goods, Mantels, Tile, Grates, Wagons, Vehicles and Harness.

## Cutting Down Expenses.

### Methods Employed by a Big City Hardware House to Cope with Panic Conditions—Reducing Help and Running Expenses—Important Savings in Overhead Charges.

IN the fall of 1907 there was a sudden reversal in the business situation. This was immediately felt more severely in some sections than in others, but was practically common to all commercial centers. The larger the city the more serious the financial stringency and the shrinkage in all branches of trade. The change found the Hardware trade as well as many others in a state of strained activity and unhealthy expansion. Business was being done under high tension and the trade of many houses had grown faster than

#### Conditions Before the Panic.

was consistent with economical development. Everything was being done on an extravagant basis, expenses running unnecessarily high in all departments merely because executives had no time to study out and practice economy. Indeed the matter of a few hundred dollars expense more or less seemed trivial in comparison with the activity going on and the amount of profitable business obtainable.

The change was sudden and the extent of the reaction was not fully appreciated by many merchants. Some foresaw only a temporary setback and the necessity of retrenchment and readjustment did not appeal to them immediately. Gradually, however, it was forced upon them and acted upon. A profitable subject of study may be found in the action taken by intelligent merchants who cut out the extravagances which had crept into their business, reduced their overhead expenses in every possible way and got their organization down to a rock bottom basis on which they could at least pay expenses while hard times lasted and from which when conditions again improved they could build on a more healthy and permanent basis.

#### Cutting Out Extravagances.

The following is a description of the methods employed by a representative Hardware and supply house situated in a large city to meet the situation above described, and a study of the procedure will undoubtedly prove interesting and helpful to many of our readers who have experienced a somewhat similar situation.

#### The Help Problem

was naturally the first one considered. Here the greatest extravagance had crept in. The firm found that it had too much help, that it was too high paid and that it was extremely indifferent and inefficient. For many months the tendency in every department had been to ask for more and more assistance. Whenever a man was at all crowded with work his first thought was of a helper and in the condition of things it was easier for the management to grant it than to examine and find out whether it was really needed or how to get along without it. Again employees were very particular about what work they did and did not hesitate to complain if asked to do anything regarded as not strictly a part of their duties. They were not hired for this or that, they would say. If they had to do it they would resign.

#### Too Much Help.

The danger of losing employees, especially if they were to some extent broken in, was a serious one. Help of all kinds was hard to get. As a result demands for increases in salary even when unreasonable had to be met. Personal dissensions led to a lack of harmony in the working force which in the end was expensive to the management. Loyalty and regularity were at a discount and it was also difficult to exact even a fair degree of efficiency.

#### Wages High, Efficiency Low.

When the reaction came there was an immediate change in this situation. It became a question not of holding clerks but of allowing them to remain. The whole force was carefully scanned with a view to present and

future value and employees knowing that they were at last on trial and that it would be difficult to secure new positions were more disposed to put forth their best efforts. The policy adopted by the house was not to reduce salaries or lay off people temporarily, which even in the face of good reasons cannot fail to cause dissatisfaction and discouragement. Instead it was carefully considered what people could be got along without and they were let go, while those selected to remain had the situation frankly explained and

#### Salaries Unchanged. Work Increased.

were told that in order to hold their places at their salaries it would be necessary to double up on work and assist the concern in keeping down expenses while the depression continued. This was better than accepting a cut or losing a job altogether and those who were given the opportunity were disposed to accept it with good grace.

#### Salesmen.

What has been said applies, of course, in the main to the lower grade of help, clerical assistants, stock clerks, &c. Coming to the salesmen, the problem was harder to manage. The firm had quite a number of men, a few on salary, but more on commission, successful salesmen preferring the latter method of compensation in prosperous times, since it gives them a chance of running their income up to good round figures. When the slump came the earnings of these men were cut in half or even worse, and not realizing perhaps that the situation was general, some were inclined to criticise the firm or imagine that they could better themselves by making another connection. A tendency to overdraw also cropped up and had to be effectually checked.

#### Commissions Cut in Half.

It was unavoidable that some of the least valuable salesmen should be discharged. It was unwise to let them continue on drawing accounts with poor prospects of making good. With those whom the house wanted to retain the problem was to prove that the concern was treating its men as well, if not better, than other local houses and that they would lose rather than gain by making a change; above all, it was necessary to keep them from becoming discouraged. Generally speaking, it is fair to assume that the men who remained under the conditions and after the selective process had been completed were real assets whose loyalty could be counted on, whose service would be the best obtainable, and who might be intrusted with the development of the business and allowed to hope for substantial recognition when times improved.

#### Preventing Discouragement.

#### Space Reduced.

At the time of the panic the concern was occupying practically the whole of a good sized building. In the city and locality this space represented a high value. It was, of course, decided to reduce stock to a minimum working basis, and with a smaller working force and less necessary furniture it was found that after some rearrangement one of the floors could be dispensed with. This was, therefore, leased to a party carrying an allied line with whom the firm had considerable dealings. The important saving effected in this way was indirectly increased by a correlative reduction in the cost of heat and light.

#### Leasing a Floor.

#### Light.

The light question, however, was studied as a separate problem. The building had been profusely lighted with electricity. Individual lights were furnished for almost every employee, and it was found that they were thoughtlessly burned much unnecessary time. After experimenting, the electricity was taken out and improved gas appliances were substituted. Lights were shifted with a view to reducing the number required, and many individual desk lights were cut out and

#### Profitable Experimenting.



large ceiling or wall lights installed. After the entire lighting problem had been gone over the light bills showed a monthly saving of about \$40.

#### Telephone.

The next expense scrutinized was that of telephone, and it was found that this had been used with careless extravagance for both business and personal calls. With fewer employees and less business, there was also a reduction in the number of really necessary calls. Two trunk lines were cut out entirely and several substations removed without material inconvenience. A saving of from \$25 to \$30 a month resulted—between \$300 and \$400 a year.

#### Cartage.

A material economy was also effected in the teaming department. The house maintained two drays, which were used almost entirely for deliveries. For hauling incoming freight of any volume outside teamsters were regularly employed. With fewer deliveries to make and less urgency on the part of customers in demanding rush service, it was found that by carefully rearranging and slightly lengthening the delivery routes it was impossible to get one of the firm's teams free every other day for

## Group of Aged English Cutler Men.

THE longevity of a group of workmen in what has always been classed a dangerous trade is forcibly emphasized in the engraving here given reproducing six cutlers and grinders who have been continuously in the employ of George Wostenholm & Son, Sheffield, England, for an aggregate period of 350 years. It is also a tribute to the substantial progress accomplished in safeguarding workers and eliminating injurious manufacturing methods and processes.

Beginning at the left is Albert Smith, aged 76, followed by Edward Cowley, 75, and Charles Bacon, with the full beard, 75, all cutlers. The other members of the group, grinders, are Edward Woolhouse, standing, 73 years of age; George Bell, sitting, 76, and William Siddall, 74, at the extreme right.

Originally the photograph from which our engraving is taken was suggested by a discussion of the ages of work people in various manufacturing industries in the Sheffield District and elsewhere, growing out of a re-



*Group of Wostenholm, Sheffield, Cutlery Men Whose Continuous Service Aggregates 350 Years, and Who Are Still at Work.*

hauling incoming freight; thus the expense for outside cartage was almost entirely saved.

#### Buying, Etc.

As stated, it was decided to reduce the stock carried, which by painstaking effort was worked down from 25 to 30 per cent. The greatest care was used in buying, and as money was high and scarce every possible concession was sought from manufacturers and others, not only in prices, but also in the way of dating and cash discount. Thus the capital was kept working to the best possible advantage, although a fairly liberal policy could be pursued with customers who felt the stringency but were believed to be good.

#### Working Up Specialties.

Special attention was given to working up lines to which increased effort might profitably be devoted—lines on which during the recent busy months comparatively little time had been expended. Careful plans were made for "playing up" specialties, and with co-operation by the salesmen considerable business was built up in new or out of the way lines. These not only paid a profit at the time, but promised especially good returns for the future.

It was by such intelligent discrimination and effort that the house met the situation precipitated by the panic. The methods described were successful not only in enabling dividends to be continued, but even more emphatically in preparing a solid foundation for substantial future development and increased profit.

mark of the Professor Osler order, that when men attained a certain age in manufacturing trades they were incapacitated as factors in production commensurate with their pay. A Wostenholm employee overhearing a discussion carried on by an English press representative investigating the subject and getting photographs of groups of mechanics still at work when over 60 years old remarked that if he wanted something better than he then had it could be obtained at the Wostenholm factories.

The Wostenholms have people of three generations at the bench in their employ—from grandparents to their grandchildren. These workers began as children, according to custom, and have been continuously with the house ever since, as piece workers. The business was established by George Wostenholm, and the numerous kinds of cutlery have long been standard products in the United States, where business has been conducted for over a century. The branch house at 105 Chambers street, New York, is in charge of George Quirk, who came out from Sheffield some years ago as successor to Asline Ward.

THE LOVELL MFG. COMPANY, Erie, Pa., is furnishing the Hardware trade with an attractive combination Hanger and Easel, showing in colors its No. 790 guarantee Clothes Wringer, with steel ball bearings and enclosed cog wheels.

CROSS BROS. have opened a general Hardware store at 2330 Woodward Ave., Detroit, Mich.



This department is open for the discussion of questions which arise in the practical conduct of the Hardware business. Our readers are invited to contribute, submitting inquiries or answering questions.

Correspondents are expected to give their names and addresses, but in order to encourage frank expressions of opinion the advice of our correspondents will be treated in confidence, names and addresses not being published.

For convenience, Questions or Answers should be addressed to THE IRON AGE QUESTION BOX, 14-16 PARK PLACE, NEW YORK.

### Does It Pay a Hardwareman to Run a Tin Shop?

Replying to this question we have the interesting letter given below from an enterprising Hardwareman in Illinois who relates his experience in this line as well as his method of looking after charges. It will be noted that this department of his business has not recently been conducted with satisfaction and that he intends to discontinue it in the fall and devote the time thus saved to the prosecution of other branches yielding a profit:

**FROM ILLINOIS:** The writer has kept accurate account of our tin shop for the past two years. Our shop men do nothing but shop work, and hence the time is easily kept. We charge all time, material going into the shop, fire, light, drayage, small tools, &c., to shop account and credit amounts for all shop jobs, Furnaces, Gutter, &c.; also look over cash register once each week and credit for small repair jobs. In short, we charge everything the shop costs and credit all it earns. Our balance shows that there is no money in it, and we are shaping things to discontinue the shop in the fall. The writer has done all the estimating, soliciting, seeing that the work was installed as agreed, &c., without any charge to shop account, and has come to the conclusion that his time can be spent to better advantage in the store.

I started working in a Hardware store in 1870, when nearly all of them had shops in connection and for many years tinnermen filled in all odd time making Pails, Boilers, Milk Pans, Gutter Pipe, Elbows, &c. These goods are now bought of factories cheaper and better than can be made by hand in small shops.

**Years Ago and Now.** From 1870 to 1892 tinnermen's wages were from \$10 to \$13 a week, 10 hours daily. In our city we pay 45 cents per hour, eight hours a day—one and one-half price for overtime—equal to \$25 to \$28 a week. In an old day book recently I saw an entry, made in 1850, "Paid my tinner one week's wages, \$6." How would that suit the present day tinner? Our city is full of small shops, run by one or two tinnermen who figure work on 45 cents an hour basis, and the men work 10 to 12 hours per day. Hardware merchants who hire men cannot compete. I do not think it as essential to have shop with store as it used to be.

### Selling Stock to Farmers.

The letter from a North Carolina house given below describes an actual experiment in the line of selling stock in an incorporated company to farmers with a view to enlisting their co-operation and interest in extending the business. It will be observed that the experiment was an utter failure and that it was found necessary to buy up the stock thus held and reduce the number of stockholders:

**FROM NORTH CAROLINA:** The writer has had the management of an incorporated company with \$25,000 capital for the past three and one-half years. We have been doing an annual Hardware business of about \$85,000 to \$100,000. This concern was first organized about six years ago, with about 40 stockholders, the stock being held in amounts from about \$50 to \$4000. Quite a large lot of the stock was scattered all over the county, all prominent farmers being stockholders, hoping thereby to gain their trade and

influence, thinking it would be a great help to the business. In the writer's opinion, it was an utter failure so far as this part was concerned, and we have been gradually buying up this stock for the past three years and getting it out of the hands of so many small stockholders. We found that nearly all of these stockholders expected us to sell goods to them at close confidential prices with scarcely any profit at all. In fact, we have in mind some of our former stockholders who now give us much more business and at better profits than when they formerly held stock with us. As to their influencing other trade to your store, we do not consider this worth "a hill of beans." We believe that the impression gets out among the farmers generally that the stockholders of a concern get better prices than the regular trade gets, and this injures the business more than their influence is worth to you. It is our experience that the average farmer does not know anything at all about mercantile business, and cannot understand that he is to get a dividend on his stock rather than low prices on his purchases. It is all right to incorporate, but do not have too many stockholders. We find that we have to work harder for the business of some of our stockholders than for most any other trade.

**Stockholders Wanted Close Prices.**

**Farmer Doesn't Understand.**

In the following letter our correspondent expresses his conviction that any project of this character would encounter difficulties that would more than outweigh any advantages:

**FROM NEW YORK:** We have never heard of a legitimate Hardware merchant trying any such plan as this. In some respects the plan looks feasible on the ground that if 20 or 30 influential farmers were interested in a business, especially if that business paid dividends, each stockholder would work to the best of his ability for the interest of the firm. On the other side of the question, however, we believe there would arise difficulties that would more than outweigh any possible advantages. For instance, every stockholder in the

**Disadvantages.**

concern could on some pretext or other demand that his right to see the books and accounts be recognized at most any time. Once he had seen them and had gained some inside knowledge of the business the trouble would begin. Furthermore, we believe that farmers who have made such an investment as this would expect preferential treatment in some way or other, which, of course, could not be fairly granted. It is our conviction that even if such stockholders were in the great minority, they would cause so much annoyance that an undertaking along these lines would soon be abandoned.

### Manufacturers' Brands vs. Special Brands.

In common with most merchants who have written on this subject, the correspondents whose letters are given below prefer to handle manufacturers' brands. One of them, however, advances reasons why special brands are entitled to consideration:

**FROM OHIO:** Provided special brands are of the same quality as manufacturers'. I would prefer them, as almost every one knows the price of factory brands. But I fear that special brands, or a large percentage of them, are seconds, and on that account I prefer manufacturers' brands. I have found that standard brands as a rule are better goods, but competition is so sharp that it has probably driven some merchants to stocking special brands, not so much from choice as to be in a position to hold their own.

**FROM NORTH CAROLINA:** I prefer factory brands, for the following among other reasons:

1. The demand for factory brands is already created, therefore they are easier to sell.
2. Factory brands are more satisfactory when sold. If a tool breaks it is the fault of the user.
3. You are unrestricted as to buying; can buy anywhere and from anybody.
4. If profits are not so large as in the case of special brands, the satisfaction in handling and saving in time are worth more than the difference.

**JESSE PETTIT BODINE** of J. P. Bodine & Sons, Flemington, N. J., died July 30, in his seventy-sixth year, from the effects of a paralytic stroke. He learned the hardware and tinsmith business in Trenton, going to Flemington in 1858, where he was in the hardware business with A. V. Bonnell. In 1866 he opened a store on his own account and had the reputation of being the oldest merchant in Flemington. He leaves a widow and two sons, William H. and Frederick J. Bodine.



## Parcel Post Legislation.

### Post Office Committee Completely Reorganized—Resolution Looking to Publication of Lists of Rural Route Patrons—Another Broadside from the Postal Progress League

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, August 10, 1909.

The closing hours of the special session of the sixty-first Congress, which adjourned on the 5th inst., were marked by several incidents bearing upon the campaign to secure parcel post legislation. These included the announcement by the Speaker of a completely reorganized Post Office Committee, the introduction of a resolution designed to bring about the publication of the names and addresses of the patrons of rural routes, an object long sought by the mail order houses, and the formal presentation in the House of the legislative programme for the new Congress of the so-called Postal Progress League.

#### The Reorganized Post Office Committee.

The retirement from Congress of Representative Overstreet of Indiana, and the complete reorganization of the House committees by the Speaker, has resulted in the appointment of a new committee on the Post Office and Post Roads, from which no less than nine of its 19 old members have been dropped and their places filled by Representatives of more or less experience in legislative affairs, but without previous service on this committee. Those who have been retired include Representatives Overstreet of Indiana, Snapp of Illinois, Goebel of Ohio, Steenerson of Minnesota, Darragh of Michigan, Dwight of New York, and Hoggatt of Colorado, Republicans; Hill of Mississippi, and Smith (delegate) of Arizona, Democrats.

The new members are Messrs. Weeks of Massachusetts, chairman; Fassett of New York, Smith of California, Lowden of Illinois, Durey of New York, Hamer of Idaho, Dodds of Michigan, Cox of Indiana, Cameron (delegate) of Arizona. The new committee, therefore, stands as follows:

#### REPUBLICANS.

John W. Weeks, Massachusetts.  
John J. Gardner, New Jersey.  
Nehemiah D. Sperry, Connecticut.  
William W. Stafford, Wisconsin.  
George F. Huff, Pennsylvania.  
J. Sloat Fassett, New York.  
Sylvester C. Smith, California.  
Frank O. Lowden, Illinois.  
Cyrus Durey, New York.  
Thomas R. Hamer, Idaho.  
Francis H. Dodds, Michigan.  
Victor Murdock, Kansas.

#### DEMOCRATS.

John A. Moon, Tennessee.  
David E. Finley, South Carolina.  
James T. Lloyd, Missouri.  
John H. Small, North Carolina.  
Thomas M. Bell, Georgia.  
William E. Cox, Indiana.  
Ralph A. Cameron, Arizona.

#### The New Chairman.

The selection of Representative Weeks of Massachusetts as chairman of this important committee represents a notable departure from the rule of promoting the ranking member of a committee to the chairmanship, but in this case a number of considerations have moved the Speaker to ignore precedents. In the first place, Representative Gardner of New Jersey, the ranking Republican member of the committee, desired to be reappointed to the chairmanship of the Committee on Labor, where he has served for many Congresses, and, of course, could not hold both chairmanships. Mr. Sperry of Connecticut, the next Republican member, was already slated for reappointment to the chairmanship of the Committee on the Alcoholic Liquor Traffic, which has jurisdiction of numerous important measures.

These two members of the committee having been eliminated from the calculation, and excellent committee assignments having been provided for other veteran Republican members, the Speaker felt justified in looking elsewhere for a chairman. He has long held Representative Weeks in high regard and has consulted him frequently on postal and other questions. The Massachusetts member is a graduate of the United States Naval Academy, is a banker of experience, and is in the prime

of life, being just 49 years of age. While no one is authorized to state his position on parcel post and other similar propositions, yet there is good reason to believe that Mr. Weeks will prove a successor to Representative Overstreet, whose policy will be in every way satisfactory to the retail merchants of the country, concerning whose interests the new chairman is fully informed by reason of his long experience as a practical banker in an enterprising New England town.

#### Names and Addresses of Rural Route Patrons.

Just before the close of the recent special session, Representative Austin of Texas presented in the House a joint resolution providing that "upon application of any Senator, Representative, or delegate, it shall be the duty of a postmaster or carrier to furnish for official use the names, addresses and occupations of those receiving mail within the State, District, or Territory so represented." Readers of *The Iron Age* will recognize this resolution as practically identical with a measure introduced in the Senate several years ago as an amendment to the annual post office appropriation bill, but beaten on the point of order that new legislation can be added to a budget bill only by unanimous consent.

It is a well-known fact that certain mail order houses have solicited from Senators and Representatives the names and addresses of the residents of their respective States and Congressional districts, and the opportunities that would be opened up by the passage of such a resolution as that presented by Mr. Austin may be left to the imagination. Private secretaries of Congressmen are believed to have turned many a penny in times past by supplying mail order houses with names and addresses gathered through other channels than the Post Office Department, but a veritable industry would be established should the co-operation of the postal authorities be secured. It is not suggested that Representative Austin is moved by an improper motive in presenting this resolution, but in view of the history of the efforts that have been made in the past by the catalogue concerns to obtain the names and addresses of the patrons of rural routes it goes without saying that the Post Office Committee should promptly consign it to a deep pigeon-hole.

#### The Programme of the Postal Progress League.

In the *Congressional Record* published on the 5th inst., and including the final proceedings of the special session, there appears what is known as a "leave-to-print" in the form of an elaborate document submitted by Representative Bennet of New York, as the "views of the Postal Progress League." Mr. Bennet does not comment on these views, but as they include the text of a bill which he introduced in the House on June 17 last, and as he states that he "takes pleasure" in submitting the document, he may fairly be said to indorse its expressions. Under the suggestive heading, "The Post Office, Our Mutual Express Company," the league frankly declares that the common welfare demands the widest possible extension of the postal service to include practically all of the business now carried on by the express companies. Continuing, the league says:

The Post Office is the most important department of our National Government. Its system of rates—regardless of distance, regardless of the character or volume of the matter transported, rates determined by the representatives of the rate payers in Congress assembled on the basis of the cost of the service rendered—its system of uniform rates places our whole country on a plane of the most perfect commercial equality. Up to its limits there can be no possible discrimination either as to persons, places or things. Up to its limits, the humblest citizen on the most out of the way rural route is guaranteed the transport of his supplies and his produce at the same rates as the biggest corporation in our greatest metropolis. These rates, moreover, may be steadily reduced with the improvement of our transport machinery and its administration. And yet by our own limitation of this mighty service we deny ourselves its use almost altogether in local traffic, and in through traffic confine it to parcels of less than 6 oz.

Meantime we pay private express companies what "the traffic will bear" for the transport of our large parcels, and in our local traffic cheerfully carry our small parcels in our pockets or our handbags or dispatch them by private messengers or private vehicles. Such petty work is beneath the notice of our great private express companies. In many small places they have no offices. Even in our great cities they have no regular daily course, save in a few business districts. If the ordinary city resident would dispatch a parcel by express he must go after an express wagon on foot or by telephone. The postman—our public expressman—comes to our doors, one, two, three, four times a day, or oftener. We have but to substitute a machine post for our overburdened foot post, and, with a perfected system of collection and delivery of insured parcels at reasonable rates, we shall have a postal express at hand, ready

and competent to do our bidding on our own terms and conditions.

#### The League's Remedy for Existing Conditions

is a merchandise rate of 8 cents per pound, except on rural routes. In the rural service the rate is made 1 cent per pound on packages of 1 lb. in weight, 5 cents on packages weighing more than 1 but not more than 11 lb., and 10 cents on those weighing from 11 to 25 lb. It will be noted that these rates are but a fraction of those proposed by former Postmaster-General Meyer, and that they are less than 5 per cent. of the rates which postal experts have declared to be barely remunerative to the Government. Nevertheless, these figures are subjected to such ingenious juggling by the Postal Progress League as to produce the following results:

In such a service there can be but one class of mail matter. With its cubic foot bulk limit and 25 lb. weight limit, the rural public would be provided with a service of infinite value for themselves and quite within the capacity of the present rural machinery. The wants of the average rural family would surely require the posting to and from the post town and the home of at least 1 cu. ft.—one 10-cent packet—a week; and even such a scanty use of the service, implying only an outgo of about \$10 per year per family, would increase the postal revenues by over \$40,000,000 a year. With an increase of the underpaid carriers by \$1 a day per carrier, the dispatch of a single 10-cent package to and fro in the local traffic of the average rural family would still leave a surplus of over \$28,000,000 a year, and would convert the almost \$17,000,000 postal deficit of 1908 to a surplus of \$11,000,000.

Of course, it is only necessary to increase the prospective use of this service from 1 cu. ft. per family per week to 5 cu. ft. to wipe out the entire Treasury deficit and thus forestall the increased revenues which the Payne tariff bill has just been enacted to produce!



#### Zeal.

Experience shows that success is due less to ability than to zeal. The winner is he that gives himself to his work, body and soul.

—Charles Buxton.

#### Indecision.

Indecision is a ball and a chain on the leg of the person who has not yet learned to go forward without looking back. It is a habit of mental indolence and moral cowardice which may be corrected. Many roads cross the pathway of life. We are forever coming to the corners of the road and must choose the way that we are to go. There are times when there is indeed great difficulty in making a choice, when appearances each way are equal, when to go wrong may mean disaster. It is well to halt and think deeply, to pick up and scrutinize every little bit of evidence which will aid in arriving at the right decision, but to be forever halted in the highway of life looking first in one direction and then in another is unnecessary. Watch out sharply and press on.

Life is an extension from one decision to another. From breakfast until he sinks into sleep man is called upon at almost every minute to make decisions. He should cultivate the habit of rendering his decisions promptly, even reaching out to coming conditions, so that he may when the moment arrives be ready to pronounce judgment. Who can compute the time lost by the indecisive man. With some it must mean years out of the allotted span, wasted days thrown away

#### Habit Becomes a Disease.

by those who know no better. As a man dallies he loses not only courage, but his powers are impaired, and very often opportunities slip away while he hangs back like

a bashful boy. The habit of indecision at length takes on the nature of a progressive disease; the time spent to-day in choosing means more dallying to-morrow and even more the next day. The powers of self-reliance and self-confidence become enfeebled and manhood is lost. The tide is always ebbing or flowing with our powers. Deciding quickly and courageously to-day helps to strengthen for similar action to-morrow. Thus we are strengthened or weakened by our determination to be or by drifting along. It is better to make an error once in a while than to be forever standing in despair like a lost child.—James E. Clark.

#### Up in Front.

A crowded street car often reminds me of life. You know in the cars the crowds stay near the door. There is always plenty of room up in front, but to get there takes initiative and push, and somehow or another the average person would rather stay in the crowd than take the trouble to work his way up to the front. The often repeated cry of the conductor, "up in front," falls on unhearing ears. To stay with the crowd is much easier than to strike out for one's self. The crowd seems to hold one magnetized, and though those vacant seats away up there near the motorman appeal to one's sense of ease, still they are a long way off! So we postpone the troublesome working-up-to-the-front process and willingly hang onto our strap near the door with the rest of the crowd.

So it is with life. The multitudes hang around the bottom of the ladder, fearing to go up a few rungs. Thousands and millions seek the \$10, \$15, \$18 and \$25 a week jobs, but few, very few indeed, have the nerve, ability and enterprise to go after the \$5000 and \$10,000 a year positions.—J. A. Murphy.

#### Starting the Day.

Begin the morning by saying to thyself, I shall meet this day with the busybody, the ungrateful, arrogant, deceitful, envious, unsocial. All these things happen to them by reason of their ignorance of what is good and evil. But I who have seen the nature of the good, that it is beautiful, and of the bad, that it is ugly, can neither be injured by any of them—for no one can fix on me what is ugly—nor can I be angry with my neighbor, nor hate him. We are made for co-operation. To act against one another, then, is contrary to nature; and it is acting against one another to be vexed and turn away.—Aurelius.

#### Admirable Qualities.

Men are superior or inferior just in the ratio that they possess certain qualities; truth, honor, frankness, health, system, industry, kindness, good cheer and a spirit of helpfulness are far beyond any mental acquisition.—The Fra.

THE L. C. POND COMPANY, manufacturers' agent and distributor, Los Angeles, Cal., has moved its office and salesroom to its new warehouse building, 815-819 Ceres avenue, where better facilities permit meeting the requirements of customers promptly.

THE SMITH HARDWARE COMPANY, Ensley, Ala., received the first prize for its float in the Fourth of July parade, in which nearly a hundred vehicles took part. The float was V-shaped, was trimmed in red, white and blue, and displayed the Keen Kutter brand of Tools.

We are advised by the Anniston Hardware Company, Anniston, Ala., that the reports in the daily press in regard to fire in its establishment are erroneous. There was a fire in adjoining premises, but the Anniston building was uninjured.



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## Correspondence.

## Introducing New Goods.

To the Editor: A short time since I read a communication in your columns written by a manufacturer, in which he severely criticised the jobbing trade in general and the jobbers' salesmen in the matter of introducing new goods. As a traveling salesman with a Hardware jobbing house for 10 years, I beg to state that this manufacturer knowingly or unknowingly is not giving a correct impression.

In the first place a jobbing Hardware salesman has a multiplicity of items to bring to the attention of his customers. He cannot specialize on any one item, but must make a rapid fire canvass of the line in general.

## One of the Very Best Ways to Start an Order

after entering a store is to show something new and talk it up and interest the customer. You can just wager that not a real salesman in the United States in the jobbing Hardware line is leaving any grips filled up with new specialties at hotels while he calls on the stores empty handed. A few order takers may, but their days on the road are numbered. To secure new business and hold old business a jobber must be on the lookout for new salable goods, put them in stock and have his salesmen push them.

A salesman showing something interesting to the trade every time he calls may be sure that merchants will soon look forward to his visits with interest and in return give him some satisfactory business.

Some manufacturers expect a jobber to push their line to the exclusion of all others, and if it be unwieldy or long to have a salesman devote most of his time to it. These manufacturers will probably be disappointed.

Great care has to be exercised in placing these new goods in stock or a jobber would require additional warehouses to store the many goods that manufacturers would have customers jostling each other to take from the retail merchant's shelves.

## Overloading Customers.

When we jobbing salesmen introduce a new article we have to be careful not to overload a customer—we expect to call again. I recollect distinctly a certain tool put on the market a few years ago. Many of my customers bought a dozen or two, and I was informed that the poor jobber could never, never get this article. After a careful examination of the article I told my principals I was not sorry if I could not have it to sell. Some months later I was offered a commission by certain of my customers to take the tools off their hands at three-quarters the price paid. I referred them to the specialty man who sold them. He had not come around to see them again. Had I drummed the goods my customers would have bought one-sixth dozen each. That would have been good judgment. If the tools filled the bill they could have bought more.

When we stop and think what a very, very small percentage of these new goods ever become permanent sellers and money makers!

## JOBGING HARDWARE SALESMAN.

THE SPIRO HARDWARE COMPANY, a progressive concern in Birmingham, Ala., gives prominence to the Stove department of its business by a distinctive stamp, which is shown herewith, reduced in size. This is used on stationery, wrapping paper and for advertising purposes generally. In addition to Stoves, the company handles Hardware, Tools, &c.



In the illustrated description of the Ideal Self-Heating Gasoline Sadriron which appeared in *The Iron Age* of August 5, the city address of the Ideal Sadriron Mfg. Company, Cleveland, Ohio, was incorrectly given. The correct address is the Guardian Building, and not the Cuyahoga, as stated.

### Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of new catalogues, price-lists, &c., for our Catalogue Department and for notice in this column.*

WOBURN GEAR WORKS, 32 Nashua street, Woburn, Mass.: Catalogue devoted to Spur, Bevel, Miter and Worm Gears, Worms, Pinion Wire, Racks, Ratchets, Chain, Sprockets, Shafting, Bearings, Collars and End Thrust Bearings.

UNION STEEL SCREEN COMPANY, Albion, Mich.: Catalogue No. 14 relating to Sand and Coal Screens, Heavy Woven Wire Cloth, Wire Shelving, Oven Racks, Refrigerator Shelves, Wire Baskets, Shaw's Calf Weaners, Steel Display Racks, Boiler Racks, Window Guards, Brass Electric Fan Guards, Special Wire and Iron Work of all kinds.

DIEHL NOVELTY COMPANY, Sheboygan, Wis.: Catalogue illustrating Storm Sash and Screen Hangers and Fasteners, Sash Locks, Storm and Screen Door and Window Sets, Catches, Hinges and Stationary Sets, Hinges and Catches for basement windows, &c.

BARRETT MFG. COMPANY, New York: Catalogue devoted to Barrett Specification Roofs—that is, roofs of coal tar pitch, tarred felt and slag or gravel. Illustrations are given of a number of railroad roundhouses throughout the country on which such roofs have stood the test.

WARWOOD TOOL COMPANY, Wheeling, W. Va.: Illustrated catalogue of Picks, Mattocks, Grub and Hazel Hoes, Coal Miners' Tools, Wedges, Sledges, Crowbars, &c. The catalogue is handsomely illustrated, some of the goods being shown in colors with colored labels.

ARMSTRONG MACHINE WORKS, Three Rivers, Mich.: Catalogue illustrating and describing the Dodge Potato Digger.

STANDARD ARMS COMPANY, Wilmington, Del.: Catalogue A illustrating High Power Rifles, automatic and hand operated.

COVERT'S SADDLERY WORKS, Interlaken, N. Y.: Catalogue relating to Chains, Snaps, Halters, Wagon Jacks, &c. An alphabetical index is followed by a numerical index, which facilitates ready reference. Illustrations of the goods are accompanied by numbers, sizes and list prices.

REMINGTON TOOL & MACHINE COMPANY, 50 Congress street, Boston, Mass.: Circular illustrating Twist Drill Grinding Gauge, Spring Winder and Micrometer Surface Gauge.

KEYSTONE NAIL COMPANY, Pittsburgh, Pa.: Keystone brand Galvanized Nails. The company issues an attractive booklet containing interesting information about Galvanized Nails for architects, builders, merchants and the public generally. The company also issues a large hanger, in four colors, showing its line of Galvanized Cut and Wire Nails.

UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn., and REMINGTON ARMS COMPANY, Ilion, N. Y., M. Hartley Company, 313-315 Broadway, New York, sale representative: Joint catalogue, vest pocket size, illustrating and describing their products. These include Metallic Cartridges, empty and loaded Paper Shells, Primers, Gun Wads, Percussion Caps, Brass Shot Shells, Repeating Shotguns, Autoloading Shotguns and Rifles and single barrel Shotguns and Rifles. A feature of the arrangement is a blank parallel column headed "Selling Prices," in which to insert the net selling price for each item throughout the book.

THE MASBACH HARDWARE COMPANY, 84 Warren street, New York, marketing Hardware and Cutlery, has connected its present building with No. 82, adjoining, thus adding considerable space and facilitating the handling of merchandise and the prompt execution of orders.

THE BILLINGS HARDWARE COMPANY, wholesale and retail Hardware, Billings, Mont., has recently moved into a new three story and basement building, 75 x 125 ft.,

constructed especially for its occupancy. The second and third floors and basement are devoted entirely to the wholesale department, with the exception of space on the second floor, occupied by the tinshop. The building is located in the heart of the retail district, but has a special switch track affording convenient shipping facilities. The moving of the business into its present quarters marks the latest step in the company's history of continued expansion.

### Combination Lunch and Beverage Case.

There are three compartments in the case, shown herewith, one holding a lunch box and the other two Icy-Hot pint bottles, enabling owner and companions to have fresh lunch and steaming hot or ice cold drinks without ice or fire at any time or place. In one bottle there may be hot coffee or other warm drink, and in the other any cold liquid. Or warm drinks such as soup,



Combination Lunch and Beverage Case, Keeping Beverages Cold for Three Days or Hot for 24 Hours.

eggnog, punch, &c., may be put in both bottles to keep them hot for 24 hours. Cold drinks such as champagne, beer, lemonade, &c., can be put in both bottles and remain ice cold for three days, it is stated. The cases are made of russet leather and the bottles are nickel plated. The cases are introduced by the Icy-Hot Bottle Company, 216 Post Square, Cincinnati, Ohio.

### Norleigh Diamond Shooting Coats.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., is introducing the Norleigh Diamond Shooting Coat as an addition to its line of canvas goods. The coats are all made large and roomy enough for the purpose for which they are intended. The pattern No. 1 here illus-



Fig. 1.—Norleigh Diamond Shooting Coat, Pattern No. 1.

trated is made of genuine 10-oz. army duck, dead grass color, lined throughout with 7-oz. special drill; it has four outside cut-in shell pockets with leather reinforced tabs; one cut-in match pocket, with striker in flap; one cut-in pocket on left breast for pipe and tobacco, and on the outside of this pocket, covered by the same flap,



is a whistle pocket; one flask pocket on the inside; game pockets throughout entire width of skirt, with outside entrances and an opening in the back inside, permitting depositing and taking out game without unbuttoning the coat, a desirable feature in cold weather; four genuine horn buttons; extra high corduroy faced, close fitting, blizzard proof collar, shown in Fig. 2; adjustable sleeves, with corduroy faced cuffs; ventilated gusset under arms. The coats are large enough both in skirt and sleeve for tall, long armed



Fig. 2.—Close Fitting Coat Collar.

men. The skirt is cut sufficiently full to give ample shell and game carrying space, and at the same time enable the coat to be buttoned at the bottom button. The collar buttons well up around the neck and fits snugly.

### Glass, Leather and Orange Shears.

The International Cutlery Company, Fremont, Ohio, is offering the shears shown herewith. The glass shear has exceptionally heavy blades, so as to withstand the heat in the cutting of molten glass. The blades are



Fig. 1.—Glass Shears, Japanned Handles, No. 9343K.

fastened together with a heavy bolt, so that they can be adjusted, and at the end of the handle is a knocker for breaking the glass. In Fig. 2 is shown an orange clipper that is furnished with or without ring. It has slightly curved blades and is said not to gum up on the edge. The volute shaped spring is made from coiled brass

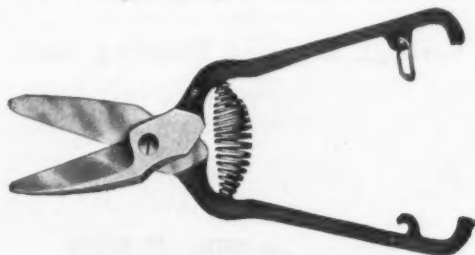


Fig. 2.—Orange Clipper with Ring, No. 9610.

wire to prevent the clipper binding or sticking. The length of the cut is 2 in., which is somewhat smaller in size than those previously furnished by the company. The leather shear is referred to as being rather odd shaped, having extremely long handles, with short blades. The lower blade has sharp teeth and the upper one a keen edge. The blades are fastened with a bolt and nut making them adjustable. The shear is particularly

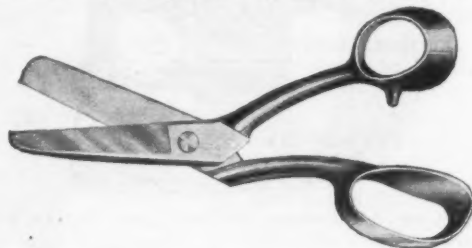


Fig. 3.—Leather Shears, Japanned Handles, Polished Blades, No. 9339.

useful for cutting belting, heavy rope, canvas, packing, &c., when it is not convenient to use a knife. It is alluded to as a quick and easy cutter, the handles being made to fit the thumb and fingers.

### The Detachable Hose Reel.

The Specialty Mfg. Company, St. Anthony Park, Minn., has brought out the hose reel here illustrated which, because of the novelty of its design and construction, is of especial interest. It consists of a galvanized iron

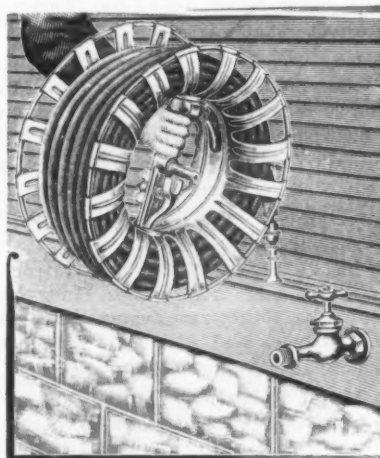


Fig. 1.—The Detachable Hose Reel in Position to Be Placed on Special Water Pipe Faucet.

reel, provided with a permanent hose connection which fits into a special faucet attached to the water pipe in place of the ordinary sill cock. The faucet forms a hollow axle upon which the reel revolves, and by means of a special leather gasket and thumbscrew the joint is made water tight. The water when turned on runs freely through the hose, whether unwound or not, and is

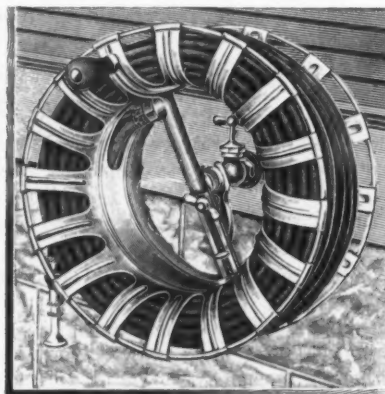


Fig. 2.—The Detachable Hose Reel on Faucet Ready to Use, Showing Handle for Rewinding Hose.

easily turned off. It is claimed that the hose will not kink or twist in winding or unwinding. It is not necessary to drag the entire length of hose about the lawn when only a short stretch is required. The reel is 20 in. in diameter, 8 in. wide and holds 100 ft. of  $\frac{3}{4}$ -in. hose. Its weight, including the faucet, is  $8\frac{1}{2}$  lb.

### The Florette Pattern of Flat Ware.

The International Silver Company, successor to Rogers & Brother, Waterbury, Conn., has now ready a



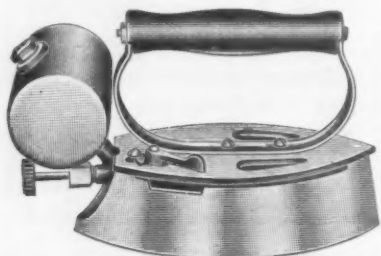
The Florette Pattern of Flat Ware.

full line of silver plated flat ware of the Florette pattern, which is shown herewith. The company calls attention to the graceful beauty of the design and the excellence of workmanship. The goods are furnished either bright or French gray with burnished shield.

Among the articles made in this pattern are spoons, forks, butter knives, sugar shells, ladles and knives. Combination sets are put up in oak and green moreen 26-piece chests with white lining, containing six each teaspoons, tablespoons, medium forks, medium knives, one butter knife and one sugar shell.

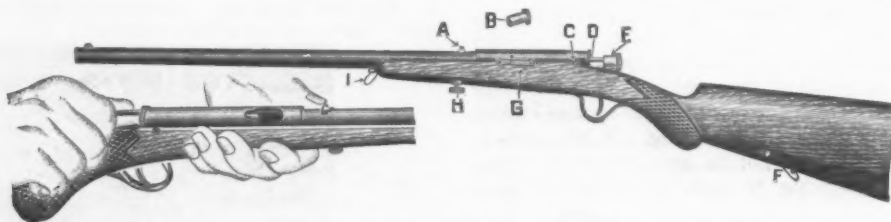
### The Modern Gasoline and Alcohol Sadirons.

The Modern Specialty Company, 60-64 Nineteenth street, Milwaukee, Wis., manufactures the sadiron shown herewith in two separate and distinct irons, one for gasoline and one for alcohol. The irons are the same in appearance, only that the generator and gas nut of the alcohol iron is different from that of the gasoline iron. The iron weighs 6 lb., is the size of an ordinary iron and



*The Modern Iron Made for Use with Gasoline and Alcohol.*

is referred to as being well made and heavily nickel plated. The company makes a comparison in operating cost, and states that the estimated average cost of fuel for ironing purposes for an ordinary family is 30 cents a week and that the cost for fuel for the Modern iron is

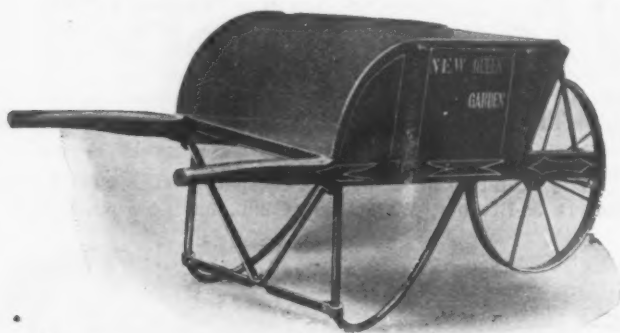


*Fig. 1.—The Bayard Auto-Cocking and Ejecting Semi-Automatic Rifle.*

1 cent a week. Among other points of excellence are the following: That there is no odor to the gasoline iron and it can be carried when traveling; that the iron can be used outside a hot room—on a porch or in the shade of a tree—and that the iron will not break and can be used indefinitely.

### The New Queen Garden Barrow.

The Western Wheel Barrow & Mfg. Company, Kansas City, Kan., is manufacturing a garden barrow with frame mortised and tenoned together with three strong



*The New Queen Garden Barrow with Iron Bottom and Pipe Legs.*

oak tenons; the other wooden parts also being of hardwood. The bottom is one piece No. 14 gauge black iron, painted on both sides, and is so constructed that it can be taken out and a new bottom inserted. This bot-

tom provides a smooth surface, there being no bolt heads or cracks to interfere with shoveling. The legs, as shown in the illustration, are made of 1/2-in. pipe, with double braces. The wheel is 20 in. in diameter and the wheel bearings are cast iron. All wooden parts of the barrow are sanded on a revolving sander, painted and striped. The box is 17 in. wide at the wheel end, 23 in. wide at handle end, 26 1/2 in. long and 10 in. deep. The barrow weighs about 50 lb. and is offered by the company to meet the demand for a strictly high grade article.

### New Pieper Firearms.

The arms here illustrated are the latest product of the reorganized Henry Pieper Gun Works, Belgium, whose distributing agent in this country is Fred Biffar, 40 Dearborn street, Chicago. The rifle shown in Fig. 1 although not a magazine gun has automatic features that closely approximate the convenience of the rapid fire of the magazine rifle. The recoil from firing automatically opens the breech block, cocks the rifle and throwing out the empty shell leaves it ready for the new cartridge, which can then be dropped in place. In Fig. 1, B represents the empty shell flying out from the recoil, C the safety latch and D the screw cap which retains the breech block. E is the breech block, G the breech block catch and H the take down screw. It is said to be the only rifle having automatic features in which the regular 22 rim fire cartridges, both short and long, can be used. High class workmanship, handsome alignment and simplicity of mechanism are referred to as the leading features of the arm. The barrel has a graceful taper from breech to muzzle and is mounted with an adjustable rear sight for short or long range. While it will

shoot black powder cartridges, those charged with smokeless powder are recommended because black powder fouls the gun too quickly. It is said to be an especially fine low priced gun. Another arm made by the same company is the Bayard self-loading pistol shown in Fig. 2. This is an automatic magazine pistol in which the mechanism is said to be extremely simple, solid and substantial and is so put together that it can be taken apart and reassembled in a few minutes without the aid of tools. Among the features to which attention is particularly called is that of a visible hammer, which in a self-loading pistol is essential to safe handling. The magazine located in front of the trigger guard adds to the even balance of the arm and at the same time makes



*Fig. 2.—Bayard Automatic Magazine Pistol.*

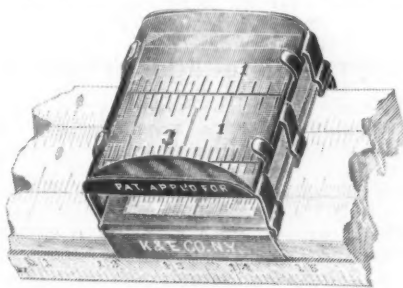
it suitable for ammunition of large caliber. It may be removed and loaded or may be filled in position from the top by means of a clip. The weapon is provided with an effective safety device in the form of a lock



which holds the hammer out of action when cocked or uncocked, locking at the same time all parts of the firing mechanism. The barrel is rifled with six grooves and has a caliber of 0.354 in. The weight of the pistol with the magazine empty is a trifle under 2¼ lb.

### Magnifier for Slide Rules

The Keuffel & Esser Company, Hoboken, N. J., and 127 Fulton street, New York, has put on the market a magnifier for slide rules, which greatly increases the accuracy when reading slide rule results, as the magnification of the necessarily fine graduations enables the individual not only to read quickly and easily but also to estimate the spaces with great exactness, always important in using proportional rules. The lens is constantly in position for reading and always in focus, with absolutely no distortion of the lines the company asserts. The magnification is ample for even the finest graduations and the field covers the full area of the indicator. The device is so made as to be instantly applied to the movable indicators of all K. & E. slide rules. The magnifiers are



K. & E. Magnifier for Slide Rules.

20 in. Log Log and Universal 10 in. and 16 in. slide rules. The company manufactures the lenses in its extensive optical department, as well as every part of the slide rules, of which lines it is the sole manufacturer in the United States.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

	gal.	lb.
Linseed, Western, Raw.....	60 @ 61	
State, Raw.....	60 @ 61	
City, Raw.....	61 @ 62	
Boiled, 1c gal, advance on Raw.....	75 @	
Raw, Calcutta, in bbls.....	75 @	
Lard, Prime Winter.....	90 @	
Extra No. 1.....	57 @ 58	
No. 1.....	48 @ 50	
Cotton-seed, Crude, f.o.b. mill.....	4.53 @ 4.60	
Summer, Yellow, prime.....	5.49 @ 5.50	
Summer, White.....	5 @ 6	
Yellow, Winter.....	5 1/2 @ 6 1/2	
Tallow, Acidless.....	57 @	
Menhaden, Brown, Strained.....	33 @	
Northern, Crude.....	24 @	
Southern.....	23 @	
Light Strained.....	33 @	
Bleached Winter.....	36 @	
Extra Bleached Winter.....	39 @	
Cocanut, Ceylon.....	7.60 @	
Cod, Domestic, Prime.....	38 @	
Newfoundland.....	40 @	
Red Elaine.....	43 @ 47	
Saponified.....	5 1/2 @ 6 1/2	
Olive, Yellow.....	1.35 @	
Neatsfoot, Prime.....	55 @ 56	
Palm, Lagos.....	5 1/2 @ 6	

### Mineral Oils—

	gal.	lb.
Black, 29 gravity, 25 @ 30 cold test.....	12 1/2 @ 13	
29 gravity, 15 cold test.....	13 @ 13 1/2	
Summer.....	12 @ 12 1/2	
Cylinder, light filtered.....	20 @ 20 1/2	
Dark, filtered.....	17 1/2 @ 18	
Paraffine, 903-907 sp. gravity.....	14 @ 14 1/2	
903 sp. gravity.....	13 @ 13 1/2	
883 sp. gravity.....	10 1/2 @ 11	
Red.....	13 @ 13 1/2	

### Miscellaneous—

	ton	lb.
Barites:		
White, Foreign.....	18.50 @ 20.50	
Amer. floated.....	17.00 @ 18.00	
Off. color.....	12.50 @ 15.00	
Chalk in bulk.....	3.00 @ 3.40	

	gal.	lb.
China Clay, Imported.....	11.50 @ 18.00	
Cobalt, Oxide.....	100 lb 1.45 @ 2.60	
Whiting, Commercial.....	100 lb 15 @ 50	
Gilders.....	100 lb 52 @ 64	
Ex. Gilders.....	100 lb 56 @ 68	

### Putty, Commercial—

	lb.
In bladders.....	1.70 @ 2.00
In bbls. or tubs, 100 lb.....	1.20 @ 1.45
In 1 lb to 5 lb tins.....	2.65 @ 3.25
In 12 1/2 to 50 lb tins.....	1.50 @ 1.90

### Spirits Turpentine—

	gal.	lb.
In Oil bbls.....	52 1/2 @ 53	
In Machine bbls.....	53 @ 53 1/2	

### Glue—

	lb.
Cabinet.....	12 @ 15
Common Bone.....	1 1/2 @ 9
Extra White.....	18 @ 21
Fish, liquid, 50 gal. bbls., per gal.....	60 @ 1.20
Foot Stock, White.....	12 @ 14
Foot Stock, Brown.....	9 @ 11
German Common Hide.....	10 @ 12
German Hide.....	12 @ 18
French.....	10 @ 10
Irish.....	12 @ 16
Low Grade.....	10 @ 12
Medium White.....	14 @ 19

### Gum Shellac—

	lb.
Bleached, Commercial.....	16 @ 16 1/2
Bone Dry.....	20 @ 21
Button.....	20 @ 20
Diamond.....	25 @ 26
Pine Orange.....	20 @ 21
A. C. Garnet.....	16 1/2 @ 17
Light Orange.....	17 @ 17
Kala Button.....	10 @ 11
D. C.....	25 @ 26
Cetagon B.....	22 @ 23
T. N.....	16 @ 16 1/2
V. S. O.....	21 @ 25

### Colors in Oil—

	lb.
Black, Lampblack.....	12 @ 14
Blue, Chinese.....	36 @ 46
Blue, Prussian.....	32 @ 36

	lb.
Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	12 @ 16
Green, Paris.....	24 @ 24
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

### White and Red, Lead &c.—

	lb.
Lead, English white, in Oil—10 1/2 @ 10 3/4	
Lead, American White:	
Dry and in Oil, 100, 250 and 500 lb kegs.....	6 1/2
Dry and in Oil, 25 and 50 lb kegs.....	7
Dry and in Oil, 12 1/2 lb kegs.....	7 1/4
In Oil, 25 lb tin pails.....	7 1/4
In Oil, 12 1/2 lb tin pails.....	7 1/4
In Oil, 1, 2, 3 and 5 lb tin cans, ass't.....	6 1/2
Red Lead and Litharge:	
In 100 lb kegs.....	7
In 25 and 50 lb kegs.....	7 1/4
In 12 1/2 lb kegs.....	7 1/2
In lots of less than 500 lbs, 1 1/2 cts lb advance over above prices of White and Red Lead and Litharge	
Lead, American, Terms: On lots of 500 lbs and over, 60 days, or 2 1/2 cts cash if paid in 15 days from date of invoice.	

### Zinc, Dry—

	lb.
American, dry.....	5 1/2 @ 5 1/2
Red Seal (French process).....	6 1/2 @ 7
Green Seal.....	7 1/4 @ 7 1/4
German Red Seal (French process).....	7 1/4 @ 7 1/4
Green Seal.....	7 1/4 @ 8
White Seal.....	8 1/2 @ 9
French, Red Seal.....	8 1/2 @ 8 1/2
Green Seal.....	10 1/2 @ 10 1/2

### Dry Colors—

	lb.
Black, Carbon.....	5 @ 10
Black Drop, American.....	3 1/2 @ 3

	lb.
Black Drop, English.....	5 @ 15
Black, Ivory.....	16 @ 20
Lamp, commercial.....	3 @ 5
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	30 @ 31
Blue, Prussian, Domestic.....	28 @ 30
Blue, Ultramarine.....	5 @ 15
Brown, Spanish.....	1 1/2 @ 1
Carmine, No. 40.....	2.65 @ 2.75
Green, Chrome, ordinary.....	3 1/2 @ 5
Green, Chrome, pure.....	17 @ 25
Metallic Paint, lb ton:	
Brown.....	\$16.50 @ \$22.00
Red.....	\$14.00 @ \$18.00
Ocher, American.....	\$12.00 @ \$15.00
American Golden.....	4 @ 5
French.....	1 1/4 @ 2
Foreign Golden.....	3 @ 4
Orange Mineral, English.....	10 @ 12
French.....	12 1/2 @ 13
German.....	12 @ 13
American.....	8 1/2 @ 10
Red, Indian, English.....	5 @ 7
American.....	3 @ 3 1/2
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer.....	\$3.75 @ \$1.50
English.....	\$1.15 @ \$1.60
Sienna, Italian, Burnt and Powdered.....	3 @ 9
Italian, Raw, Powdered.....	3 @ 7
American, Raw.....	2 1/4 @ 3
American Burnt and Pow'd.....	3 @ 3
Talc, French.....	\$18.00 @ \$25.00
American.....	\$15.00 @ \$25.00
Terra Alba, French.....	\$100 lb .80 @ 1.00
English.....	\$100 lb .90 @ 1.00
American.....	\$100 lb .75 @ .80
American.....	\$100 lb .60 @ .65
Umber, T'key, Bat. & Pow'd.....	2 1/2 @ 3
Turkey, Raw and Powdered.....	2 1/2 @ 3
Burnt, American.....	2 @ 2 1/2
Raw, American.....	2 @ 2 1/2
Yellow Chrome, Pure.....	12 1/4 @ 13
Oxide Red, American.....	2 @ 7 1/4
Vermilion, English, Imported.....	@ 70
Chinese.....	\$3.90 @ \$1.00

# THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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# Current Hardware Prices.

**General Goods.**—Goods which are made by more than one manufacturer are printed in *Italics*. The prices named represent those obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

**Special Goods.**—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/4 & 10% signifies that the price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/4 and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, a book of 376 pages, which is sent free of charge to every subscriber to *The Iron Age*. It gives a classified list of the products of our advertisers and thus serves as an up-to-date DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists," 218 pages, price \$2, prepaid, contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

North's ..... 10%  
Upson's Patent, 1/2 gro., \$29.90.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....10%  
Ives' Stop Head Screws and Washers.....10%  
Taplin's Perfection.....10%

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, 1/2 doz pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.  
Fernald Quick Shifter, 1/2 doz. pairs.....\$2.00@3.00

## Anvils—American—

Eagle Anvil.....1/2 lb @ 9¢  
Hay-Budden, Wrought.....1/2 lb @ 9¢  
Trenton.....1/2 lb @ 9¢

## Imported—

Swedish Solid Steel Paragon, 1/2 lb.....1/2 lb @ 10¢  
Peter Wright & Sons, 1/2 lb, 94 to 349 lb, 11¢; 350 to 600 lb, 11 1/2¢.

## Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15&10%

## Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Com. Double Spur.....30%  
Jennings' Patn., Bright 65&10@70%  
Black Lip or Blued.....65@68¢  
Boring Mach. Augers.....70%  
Car Bits, 12-in. twist.....40&10%  
Ford's Auger and Car Bits.....40&5%  
Ft. Washington Auger Co.....35%  
Forstner Pat. Auger Bits.....25%  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list.....25&7 1/2%  
No. 30, R. Jennings' list.....30%  
Russell Jennings.....25&10&2 1/2%  
L'Hommedieu Car Bits.....45%  
Mayhew's Countersink Bits.....35%  
Pugh's Black.....25%  
Pugh's Jennings' Pattern.....35%  
Snell's Auger Bits.....60%  
Snell's Bell Hangers Bits.....60%  
Snell's Car Bits, 12-in. twist.....60%  
Snell's King Auger Bits.....50%  
Snell's Star Auger Bits.....50&10%  
Swan's Auger Bits.....60&10@70%  
Swan's, Jennings' Pattern.....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Ford's, Clark's Pattern.....66%  
C. E. Jennings & Co., Steer's Pat.....25%  
Lavigne Pat., small size, \$18.00; large size, \$20.00.....60&10%  
Swan's.....60%

## Gimlet Bits—

Common Dbl. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.25

## Hollow Augers—

Bonney Pat., per doz.....\$5.50@6.00  
Ames.....20&10%  
Universal.....20%

## Ship Augers and Bits—

Ship Augers.....40&10@50%  
Ford's.....35&5%  
C. E. Jennings & Co.:  
L'Hommedieu's.....6%  
Watrous'.....33&1/2%  
Snell's.....68%

## Awl Hafts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhandd., Shiddered.....gro. 65¢@66¢  
Unhandd., Patent.....gro. 80¢@70¢  
Peg Awls:  
Unhandd., Patent.....gro. 31¢@34¢  
Unhandd., Shiddered.....gro. 65¢@70¢  
Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00  
Handled, Socket.....gro. \$11.50@12.00  
Elmore Tool Mfg. Co.:  
Timmers' and Brad Awls.....55&7%  
Scratch Awls.....60%

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

Single Bit, base weights: Per doz.  
First Quality.....\$4.75@5.00  
Second Quality.....\$4.25@4.50  
Double Bit, base weights:  
First Quality.....\$7.00@7.50  
Second Quality.....\$6.50@6.75  
Axle Grease—  
See Grease, Axle.

## Axles—Iron or Steel.

Concord, Loose Collar.....4 1/4@4 1/2¢  
Concord, Solid Collar.....4 1/4@5¢  
No. 1 Common, Loose.....3 1/4@4¢  
No. 1 1/2 Com., New Style.....4 1/4@4 1/2¢  
No. 2 Solid Collar.....4 1/4@4 1/2¢  
Half Patent:  
Nos. 7, 8, 11 and 12.....70%  
Nos. 13 to 14.....70%  
Nos. 15 to 18.....70&10@70&10&5%  
Nos. 19 to 22.....70&10@70&10&5%

## Boxes, Axles—

Common and Concord, not turned.....lb. 5¢@6¢  
Common and Concord, turned.....lb. 6¢@7¢  
Half Patent.....lb. 9¢@10¢

## Bait—Fishing—

Hendryx:  
A Bait.....20%  
B Bait.....25%  
Competitor Bait.....20&5%

## Balances—

Caldwell new list.....50&10%  
Pulman.....50&10%

## Spring—

Light Spring Balances.....50&10@60%  
Chatillon's:  
Light Spg. Balances.....50@50&10%  
Straight Balances.....40@40&10%  
Circular Balances.....50&10%  
Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—Crow—

Steel Crowbars, 10 to 40 lb.....per lb., 2 1/4¢@—¢

## Towel—

No. 10 Ideal, Nickel Plate.....1/2 gro. \$8.50

## Beams, Scale—

Scale Beams.....40@40&10%  
Chatillon's No. 1.....30%  
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered 1/2 doz. \$0.80;  
Tinned.....\$0.93  
No. 11 Wire Coppered 1/2 doz. \$1.15;  
Tinned.....\$1.20  
No. 10 Wire Tinned.....1/2 doz. \$1.50

## Beaters Egg—

Dover Stamping & Mfg. Co.:  
Genuine Dover, per gro., No. 1, Tumbler Size, \$1.50; No. 2, Family Size, \$1.50; No. 3, Extra Family Size, \$2.00; No. 4, Hotel Size, \$3.00.  
Holt-Lyon Co.:  
Holt, per doz., No. 5, Jap'd, \$0.80;  
No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.85; No. 6, Jap'd, \$1.65.  
Lyon, Jap'd, per doz., No. 2, \$1.35.  
Taplin Mfg. Co.:  
Improved Dover, per gro., No. 60, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 132, Hotel Tin'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd, \$9.50; No. 300, Mammoth, per doz., \$25.00.

## Bellows—

Blacksmith, Standard List:  
Split Leather.....60@60&10%  
Grain Leather.....50@50&10%  
Hand—  
Inch.....6 7 8 9 10  
Doz. \$1.50 5.50 6.00 7.00 7.50  
Molders—  
Inch.....10 12 14 16  
Doz. \$8.50 11.00 13.50 15.50

## Bells—Cow—

Wrought Cow Bells.....75%  
Jersey.....75&10%  
Texas Star.....50%

## Door—

Home, R. & E. Mfg. Co.'s.....55&10%  
Hand—  
Polished, Brass.....60@60&10%  
White Metal.....60@60&10%  
Nickel Plated.....50&10%  
Sticks.....50&10%  
Cone's Globe Hand Bells.....33 1/4@35%

## Miscellaneous—

Farm Bells.....lb. 2 1/4@3¢  
Church and School.....60@60&5%  
Belting—Leather—  
First Quality, Ex. Hy., Strictly Short Lap.....60&10%  
Standard.....70&10@70&10&5%  
Light Double.....75&10%  
Cut Leather Lacing.....45@50%  
Leather Lacing Sides, per sq. ft. 25¢

## Rubber—

Competition (Low Grade).....70&10@75%  
Standard.....60&10@70%  
Best Grades.....50@50&10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%  
Bicycle Goods—  
John S. Long's Son & Co.'s 1909 list:  
Chain, Parts, Spokes.....50%  
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks Tackle—

Common Wooden.....75@75&10%  
B. & L. B. Co.:  
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%  
Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%  
Lane's Patent Automatic Lock and Junior.....30%  
See also Machines, Hoisting.

## Boards, Stove—

Paper and Wood Lined.....60%  
Embossed.....60%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....33 1/4@10%

## Bolts

Carriage, Machine, &c.—  
Common Carriage (cut thread):  
1/2 x 6 and smaller.....75&10%  
Larger and longer.....70&10%  
Common Carriage (rolled thread):  
1/2 x 6, smaller and shorter, 75&10&5%  
Phila. Eagle, \$3.00 list.....80¢@—%  
Bolt Ends, with C. & T. Nuts, 70&10%

Machine (Cut Thread):  
1/2 x 4 and smaller.....75&10&5%  
Larger and longer.....70&10&5%

## Door and Shutter—

Wrought Iron:  
Wrought Barrel Japanned.....80&10&10@85%  
Barrel Bronzed.....60&10@70%  
Spring.....70&10&10@80%  
Square Neck.....75&10@80%  
Square.....80@80&10%  
Ives' Mortise.....10%  
Ives' Wrought Metal.....10%

## Expansion—

F. H. Evans' Crescent.....40@60%  
Richards Mfg. Co.....55&10%  
Star Expansion Bolt Co.:  
Star, Lag Screw Type, 60&10&5&2 1/2%  
Star, Wood Screw Type.....40%  
Star, Machine, Single Wedge.....60%  
Star, Machine, Double Wedge, 60&10%  
Star Toggle Bolts.....60%

Steward & Romain Mfg. Co.:  
Style No. 13, Double.....60@10%  
Style No. 1, Single.....60@10%  
Style No. 100, Dbl. Jaw, Single.....55%  
Lag Screw.....66%  
Star Screw Anchors, Hollow.....40%

## Plow and Stove—

Plow.....65&5@70%  
Stove.....85&5@85&10%

## Tire—

Common Iron.....80%  
Norway Iron.....80%

American Screw Co.:  
Norway Phila., list Oct. 16, '84.....90%  
Eagle Phila., list Oct. 16, '84.....82 1/2%  
Bay State, list Dec. 23, '89.....80%

Franklin Moore Co.:  
Norway Phila., list Oct. 16, '81.....80%  
Eagle Phila., list Oct. 16, '81.....82 1/2%  
Eclipse, list Dec. 23, '89.....80%

Russell, Burdall & Ward Bolt & Nut Co.:  
Empire, list Dec. 23, '89.....80%  
Norway Phila., list Oct. 16, '81.....80%  
Eagle.....82 1/2%  
Shelton Co.:  
Tiger Brand, list Dec. 23, '89.....80%  
Phila., Eagle, list Oct. 16, 1881.....82 1/2%  
Upson Nut Co.:  
Tire Bolts.....72 1/2%

## Borers, Bung—

Borers Bung, Ring, with Handle:  
Inch.....1 1/2 1 3/4 2  
Per doz.....\$4.80 5.80 6.40 7.00  
Inch.....2 1/4 2 1/2  
Per doz.....\$8.65 11.50

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%  
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme.....15&10%

## Braces—

Common Ball.....\$1.50@1.75  
Barber's.....50&10@60&10%  
Fray's Genuine Spofford's.....60%  
Fray's No. 61, 100, 200, 614.....50%  
C. E. Jennings & Co.....50&10%  
Mayhew's Ratchet.....50%  
Mayhew's Quick Action Hay Pat.....50%  
Millers Falls Drill Braces.....25&10%  
P. S. & W. Co., Peck's Pat.....60@60&5%

## Brackets—

Wrought Steel.....80&5@80&10%  
Griffin's Pressed Steel.....75&75&10%  
Griffin's Folding Brackets.....70&10%  
Stanley's Pressed Steel.....75&10&5%  
Stanley's Folding Brackets.....70&10&5%  
Taplin Victor Handy Egg Beater Bracket.....10 doz. \$1.50

## Bright Wire Goods—

See Wire and Wire Goods.

## Broilers—

Kilbourne Mfg. Co.....75&20%  
Wire Goods Co.....75&10%

## Buckets, Galvanized—

Mfr's list, price per gross, subject to discount of 10 1/2%  
Quart.....10 12 14  
Water, Light.....\$28.35 30.75 34.75  
Water, Fr. Heavy.....46.85 49.85 53.25  
Fire, Rd. Btm.....33.50 35.90 39.90  
Well.....37.35 41.35 45.35

## Bull Rings—See Rings, Bull.

## Butts—

Brass—  
Wrought.....65%  
Cast Brass, Tiebout's.....40&10%

## Wrought Steel—

BRIGHT,  
Light Narrow, Light Reversible.....75&5%  
Reversible and Broad, 75&10%  
Loose Joint, Narrow, Light Inside Blind, &c.....75%  
Back Flaps, Table Chest, 70%  
BRONZED,  
Light Narrow, Loose Pin.....55%  
Light, Loose Pin, Ball Tip.....65%  
Broad.....85%

Extra 5¢



**Cages, Bird—**

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 1500; 200, 300, 900 .....30%  
Hendryx Bronze: Series 700, 800, 300 .....30%  
Hendryx Enameled.....35%

**Calipers—See Compasses.**

**Calks, Toe and Heel—**

Blunt, 1 prong, per 100 lb. \$3.50 @ \$3.85  
Sharp, 1 prong, per 100 lb. \$4.00 @ \$4.35

Burke's, 1 pg. Blunt Toe, 3 1/2"; 2 pg. Blunt Toe, 4 1/2"; 1 pg. Sharp Toe, 4 1/2"; 2 pg. Sharp, 4 1/2"; Blunt Heel, 4 1/2"; Sharp Heel.....13%  
Lautier, Blunt, 4 1/2"; Sharp, 4 1/2"; Perkins, Blunt, 4 1/2"; Sharp, 4 1/2" 4.15¢

**Can Openers—**

See Opener, Can.

**Caps—Primers—**

Berdan Primers, \$2 per M. 20¢5%  
Primer Shells and Bullets. 15¢10%  
All other primers per M. \$1.52 @ 1.60

**Carpet Stretchers—**

See Stretchers, Carpet.

**Cartridges—**

Blank Cartridges:  
3 C. F. \$5.50.....10¢5%  
38 C. F. \$7.00.....10¢5%  
22 cal. Rim. \$1.50.....10¢5%  
32 cal. Rim. \$2.75.....10¢5%  
B. B. Caps, Con. Ball, Sugd. \$1.00  
B. B. Caps, Round Ball.....\$1.39  
Central Fire.....25%  
Target and Sporting Rifle. 15¢5%  
Primer Shells and Bullets. 15¢10%  
Rim Fire, Sporting.....50%  
Rim Fire, Military.....15¢5%

**Casters—**

Bed.....65¢10¢70%  
Plate.....60¢10¢10%  
Philadelphia.....70¢10¢75%  
Ball Bearing.....35%  
Gem (Roller Bearing).....70¢10¢10%  
Steel Gem (Roller Bearing).....70%  
Standard Ball Bearing.....45%  
Yale (Double Wheel) low list.....40¢10%

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Proof Coil—**

American Coil, Straight Link:  
3-16 1/4 5-16 3/8 1/2 5/8  
\$7.45 \$8.00 \$8.85 \$9.25 \$10 3.00  
3/4-1. 1 1/4 to 1 1/2 inch.  
\$2.90 3.00  
German Coil.....70¢5%  
German Pattern Coil:  
6-0 to 1.....70¢10¢5%  
2 and 3.....60¢10¢40¢70%  
4, 5 and 6.....50¢10¢50¢10¢5%

**Halter—**

Halter Chains.....60¢5¢60¢10%  
German Pattern Halter Chains:  
list July 24, '97.....70¢5%  
Coverd Mfg. Co. ....35¢5%

**Cow Ties—**

See Halters and Ties.

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.  
6 1/2-6 3/4, Straight, with ring, \$26.00  
6 1/2-6 3/4, Straight, with ring, \$27.00  
6 1/2-8 1/4, Straight, with ring, \$30.00  
6 1/2-10 1/2, Stright, with ring, \$35.00  
NOTE: Add 2¢ per pair for Hooks  
Test Traces: Add per pair for Nos. 2 and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of Straight Link.

Eastern Standard Traces, Wagon Chain, &c.....70¢10¢@—%

**Miscellaneous—**

Jack Chain:  
Iron.....60¢10¢10¢70%  
Brass.....60¢10¢10¢70%  
Safety and Plumbers' Chain. 75¢  
Gal. Pump Chain.....1 1/2 @ 1.65%  
Bridgeport Chain Co.:  
Triumph Halter and Coil. 35¢2 1/2 @ 40%  
Triumph Dog.....50¢10¢60%  
Brown Halter and Coil.....45¢50¢5%  
Coverd Mfg. Co.:  
Breast, Halter, Heel, Rein, Stallion.....40%  
Oneida Community:  
American Halter, Dog and Kennel Chains.....35¢2 1/2 @ 40%  
Niagara Dog Leads and Kennel Chains.....45¢50¢5%  
Wire Goods Co.:  
Dog Chain.....70%  
Universal Dbl.-Jointed Chain. 50¢10%  
Chain and Ribbon, Sash—

Oneida Community:  
Steel Chain.....60%  
Pullman:  
Bronze Chain, 60%; Steel Chain, Coppered.....60¢10%  
Sash Chain Attachment, per set. 8¢  
Aluminum Sash Ribbon, per 100 ft. \$2.00 @ \$3.00  
Sash Ribbon Attachments, per set. 8¢

**Chalk—**

Carpenters' Blue.....gro. 50¢55¢  
Carpenters' Red.....gro. 50¢55¢  
Carpenters' White.....gro. 10¢15¢

**Checks, Door—**

Bardley's.....45%  
Pullman, per doz. \$34.00  
Russwin.....35%4%

**Chests, Tool—**

American Tool Chest Co.:  
Boys' Chests, with Tools.....55%  
Youths' Chests, with Tools.....40%  
Gentlemen's Chests, with Tools.....30%  
Farmers', Carpenters, etc., Chests, with Tools.....20%  
Machinists' and Pipe Fitters' Chests, Empty.....45%  
Tool Cabinets.....45%  
C. E. Jennings & Co.'s Machinists' Tool Chests.....7 1/2%

**Chisels—**

Socket Framing and Firmer Standard List.....80¢10¢ @ 80¢10¢10%  
Buck Bros.....30%  
C. E. Jennings & Co.....25¢7 1/2%  
Socket Framing No. 15.....25¢7 1/2%  
Swan's.....60¢10%  
L. & J. White & Co.....30¢30¢5%

**Tanged—**

Tanged Firmers.....35¢10¢40%  
Buck Bros.....30%  
C. E. Jennings & Co. Nos. 131, 181, 253  
L. & J. White Co.....25¢5%

**Cold—**

Cold Chisels, good quality. 13¢15¢  
Cold Chisels, fair quality. 11¢12¢  
Cold C' sels, ordinary.....9¢10¢  
Elmore Tool Mfg. Co.:  
Cold Chisels.....50¢5%

**Chucks—**

Almond Drill Chucks.....35%  
Almond Turret Six-Tool Chucks.....40%  
Beach Pat. each \$8.00.....35¢5%  
Cincinnati Chuck Co.:  
Independent 4-Jaw Reversible.....35%  
Jacobs' Drill Chucks.....35%  
Morrow Ball Bearing Drill Chucks.....35%  
Skinner Lathe Chucks:  
Independent.....35%  
Universal, Reversible Jaws.....35%  
Universal, Com. Style Jaws.....40%  
Combination, Reversible Jaws.....35%  
Combination, Com. Style Jaws.....40%  
Round Body or Box Body, 2 Chuck Jaws.....25%  
Geared Scroll Chucks.....25%  
Drill Chucks:  
New Model, 25%; Geared Pattern, 25%; Skinner Patent.....25%  
Positive Drive.....40%  
Planer Chucks.....40%  
Standard Vices.....30%  
Drill Press Vices.....30%  
Face Plate Jaws.....35%  
Standard Tool Co.:  
Improved Drill Chuck.....45%  
Union Mfg. Co.:  
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%  
Scroll Combinations, Nos. 83 and 84.....30%  
Geared Scroll, Nos. 33, 34 and 35.....25%  
Independent Iron, Nos. 18 and 318.....25%  
Union Drill, Nos. 200, 20, 100, 102, 103, 104.....35%  
Union Car Drill.....25%  
Universal, 11, 12, 16, 17, 13, 14, 15, 40%  
Universal No. 42.....35%  
Iron Face Plate Jaws, Nos. 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72.....30%  
Westcott Patent Chucks:  
Lathe Chucks.....50%  
Little Giant Auxiliary Drill.....50%  
Little Giant Double Grip Drill.....50%  
Little Giant Drill, Improved.....50%  
Oneida Drill.....50%  
Scroll Combination Lathe.....50%

**Clamps—**

Carriage Makers', Star, P., S. & W. Co.....50¢50¢5%  
Resly, Parallel.....30¢10%  
Hammer & Co.:  
Adjustable.....20¢5%  
Carriage Makers' H. P. Screw 40¢  
Myers' Hay Rack.....50%  
Saw Clamps, see Vises, Saw Fliers

**Cleaners, Drain,**

Ivan's Champion, Adjustable.....50%  
Ivan's Champion, Stationary.....40%

**Sidewalk—**

American Fork & Hoe Co.:  
Star, 3/4 doz., Socket, \$1.00;  
Shank, 3/4 doz., X 7 1/2, \$3.50; Shank, X 8.....\$3.75

**Cleavers, Butchers'—**

Poster Bros.....30%  
L. & J. White Co.....30%

**Clippers, Horse and Sheep—**

Chicago Flexible Shaft Co.:  
1902 Chicago Horse, each.....\$19.75  
20th Century Horse, each.....\$5.00  
Lightning Belt Horse, each.....\$15.00  
Chicago Belt Horse, each.....\$20.00  
Stewart's Enclosed Gear Ball Bearing Horse, each.....\$7.50  
Stewart's New Model Sheep Shearing Machine, each.....\$12.75  
Stewart Enclosed Gear Shearing Machine, No. 8, each.....\$9.75

**Clips, Axle—**

Regular Styles.....80¢80¢10%

**Cloth and Netting, wire**

—See Wire, &c.

**Cocks, Brass—**

Hardware list:  
Plain Ribbs, Globe, Kerosene, Racking, Liquor, Bottling, &c.....75%  
Compression Ribbs.....75%

**Coffee Mills—**

See Mills, Coffee.

**Compasses, Dividers, &c.**

Ordinary Goods.....75¢75¢5%

**Conductor Pipe,—**

L. C. L. to Dealers:  
Gal. Steel, Charcoal, Copper.

Northeastern:  
70¢10¢1/2— 50¢10¢7 1/2% 50¢10%

Eastern:  
75¢1/2— 50¢10¢7 1/2% 50¢10%

Central:  
75¢1/2— 60% 50¢10%

Northwestern:  
75¢1/2— 60% 50¢10%

Tennessee:  
70¢10¢1/2— 50¢12 1/2% 50¢5%

Southern:  
70¢10¢1/2— 50¢12 1/2% 50¢5%

Southwestern:  
70¢1/2— 50¢5% 50¢5%

Terms, 60 days; 2¢ cash 10 days. Factory shipments generally delivered.

See also Eave Troughs.

**Coolers, Water—**

L. & G. Mfg. Co.:  
Gal.....2 3 4 6 8  
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00  
Galvanized, Lined, side handles,  
Gal.....2 3 4 6 8  
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$1.15  
White Enameled.....10%  
Agate Lined.....10%

**Coppers' Tools—**

See Tools, Coppers'.

**Coppers, Soldering—**

Soldering Coppers, 3 lb. to pair and heavier, 2 1/2¢; lighter than 3 lb. to pair.....23¢

**Cord—Sash—**

Braided, Drab.....lb. 35¢

Braided, White, Com., Nos. 8 to 12, 25¢; No. 7, 25¢; No. 6, 20¢4¢

Cable Laid Italian, lb., No. 18, 37¢

Italian, lb., A, No. 18, 25¢; B, 22¢

Common India.....lb., 11¢11 1/2¢

Cotton Sash Cord, Twisted, 18¢20¢

Patent Russia.....lb., 20¢

Cable Laid Russia.....lb., 21¢

India Hemp, Br'd'd.....lb., 21¢

India Hemp, Twisted.....lb., 13¢14¢

Patent India, Twisted.....lb., 17¢

Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26¢; 6, 27¢c.

Harmony Cable Laid Italian, Nos. 7 to 12, 26¢

Pullman:  
Wire Sash Cord.....10%  
Sash Cord Attachments, per 100.....\$2.00

Samson, Nos. 8 to 12:  
Braided, 3 lb., Drab Cotton, 40¢6¢

50¢; Italian Hemp, 40¢6¢

50¢; Linen, 55¢; White Cotton, 50¢; Spot Cord.....50¢

Massachusetts, White.....lb 40¢

Massachusetts, Drab.....lb 45¢

Phoenix, White, Nos. 8 to 12.....27¢

Silver Lake, per lb.:  
A, Drab, 40¢; A, White, 40¢;

B, Drab, 40¢; B, White, 35¢;

Italian Hemp, 40¢; Linen.....57 1/2¢

See also Chain and Ribbon.

**Wire, Picture—**

Full Length.....90¢@—%

Short Length.....90¢20¢@—%

Hendryx Standard Wire Picture Cord.....90¢10%

Turner & Stanton Co. Wire Picture Cord.....90¢10%

**Cradles—**

Grain.....50%

**Crays—**

White Round Crayons, Cases, 100 gro., \$8.00, \$8.50, \$9.00 and \$10.00 according to grade.

Zehner's Lumber:  
White and Purple, Indelible.....\$7.50

Blue, Red, Green, Yellow and Terra Cotta, \$6.50; Black.....\$1.50

Giant Lumber, 5 1/2 x 15-16 in. round, all colors, \$12.00; Indelibles, \$11.00; Blacks.....\$10.00

Genuine Soapstone, Metal Workers', 5 in. x 1/4 in. Round, \$2.50; 5 in. x 1/4 in. Square, \$1.75; 5 x 1/2 x 3-16, \$2.50; 5 x 1/4 x 3-16.....\$3.00

Surmark, Black, \$2.25; Blue, Red and Yellow.....\$2.50

**Crooks, Shepherds'—**

American Fork & Hoe Co.:  
Montana.....3/4 doz. \$1.50

**Crow Bars—See Bars, Crow.****Cultivators—**

American Fork & Hoe Co.:  
Victor Garden.....50¢10%

**Cutlery, Table—**

International Silver Company:  
No. 12 M'd'n Knives, 18 1/2 doz. \$3.50

Star, Eagle, Rogers & Hamilton and Anchor.....3/4 doz. \$3.00

Wm. Rogers & Son.....3/4 doz. \$2.50

**Cutters—Glass—**

H. H. Mayhew Co.....40%

**Meat and Food—**

Enterprise:  
Nos.....\$10 12 22 32

Each.....\$2 33 \$2.75 \$1.50 \$6 25 @ \$7 1/2%  
No. 202, \$1.50.....10¢7 1/2%

P. S. & W. Co.:  
Ideal.....40¢10¢5%

Hales.....60¢5%

Little Giant.....3/4 doz. 40¢30%

Nos. 305 310 312 320 322

\$35.00 \$18.00 \$11.00 \$7.00 \$2.00 \$68.00

New Triumph No. 635, 3/4 doz. \$21.00, 40%

Russwin Food, No. 1, \$21.00; No. 2, \$27.00; 3, \$12.00.....15¢10¢10%

Enterprise Beef Shavers.....\$15.00 \$18.00 25¢30%

**Siaw and Kraut—**

Henry Diston & Sons:  
Slaw and Kraut Cutters.....35%

Corn Graters.....30%

J. M. Mast Mfg. Co.:  
Slaw Cutters, 1 Knife.....3/4 doz. \$3.00

Combined Slaw Cutter and Corn Grater.....3/4 doz. \$1.00

**Tobacco—**

Enterprise.....25¢30%

**Diggers, Post Hole, &c—**

Diston's:  
Rapid, 3/4 doz., \$24.00.....25%

Samson, 3/4 doz., \$31.00.....35%

Iwan's Pat. Post Hole and Well Auger.....40%

Vaughan Pattern Post Hole Augers.....3/4 doz., \$7.00

Perfection Post Hole Diggers, 3/4 doz., \$8.50

Split Handle Post Hole Diggers, 3/4 doz., \$7.50

Hercules Pattern, 3/4 doz., \$9.50

Kohler's, 3/4 doz., Universal, \$14.00;

Little Giant, \$12.00; Hercules, \$13.00; Invincible, \$9.00; Rival, \$8.50; Pioneer.....\$7.50

Never-Break Crucible Steel Post Hole Diggers.....60%

**Dividers—See Compasses.****Drawing Knives—**

See Knives, Drawing.

**Dressers Emery Wheel—**

Sterling Emery Wheel Dressers.....35%

Sterling Wheel Dresser Cutters.....35%

**Drills and Drill Stocks—**

Blacksmith's Common Drilling Machines.....\$1.50 @ 1.75

Breast, Millers Falls.....15¢10%

Breast, P., S. & W.....30¢10%

C. & C. Ratchet.....25%

Reversible Ratchet Die Stocks.....25%

Goodell Automatic Drills 50¢10¢10¢10%

Millers Falls Automatic Drills, Graves, per doz., Nos. 1, \$1.86; 2, \$3.16

Millers Falls Automatic Drills, 33 1/2¢10%

Noyes Repair Shop Drill No. 10, 25¢

Ratchet, Curtis & Curtis.....25%

Ratchet, Parker's.....40%

Ratchet, Weston's.....40%

Ratchet, Weston's, Style 40¢10¢10%

Ratchet, No. 012.....40¢10¢10%

Ratchet, Celebrated.....10¢10¢10%

Ratchet, Whitney's, P., S. & W. 50%

Star Drills.....50¢11%

Star Pipe Drills.....50¢11%

Sebeo Extension Drills.....40¢10%

Star Drill Holders.....50¢10¢10%

Star Drill Points.....50¢10¢10%











**Sash Weights—**  
See Weights, Sash.  
**Sausage Stuffers or Fillers**  
See Stuffers or Fillers, Sausage.  
**Saw Frames—**  
See Frames, Saw.  
**Saw Sets—**See Sets, Saw.  
**Saw Tools—**See Tools, Saw.  
**Saws—**

Atkins':	45%
Circular	50@50.10
Band	50@50.10
Butcher Saws	50@50.10
Cross Cuts	50@50.10
One-Man Cross Cut	50@50.10
Narrow Cross Cut	50@50.10
Hand, Rip and Panel	35@45
Miter Box and Compass	40@50
Mulay, Mill and Drag	40@50
Wood Saws	40@50
Chapin-Stephens Co.	30@30.10
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws	30@30.10
Diston's:	
Circular, Solid and Ins'ted Tooth	50%
Hand, 2 to 18 in. wide	60%
Band, 1/4 to 1 1/2	45%
Crosscuts	50%
Narrow Crosscuts	50%
Mulay, Mill and Drag	40%
Framed Woodsaws	25%
Woodsaw Blades	25%
Woodsaw Rods, Tinned	15%
Hand Saws, Nos. 12, 99, 9, 16, d. 10	35%
18, 120, 75, 7, 8, 107, 107 1/2, 3, 1	35%
0, 00, Combination	30%
Compass, Key Hole, &c.	25%
Hand Ice Saws	45%
Butcher Saws and Blades	30%
C. E. Jennings & Co.'s:	
Back Saws	15%
Butcher Saws	25@75%
Compass and Key Hole Saws	33 1/2@75%
Framed Wood Saws	25@75%
Hand Saws	12%
Wood Saw Blades	33 1/2@75%
Millers Falls:	
Butcher Saws	15@10%
Star Saw Blades	15@10%
Massachusetts Saw Works:	
Victor Kitchen Saws	40@10.50
Butcher Saws Blades	35@40%
Peace & Richardson's Hand Saws	30%
Simonds':	
Circular Saws	45%
Crescent Ground Cross Cut Saws	30%
One-Man Cross Cuts	40@10%
Gang Mill, Mulay and Drag Saws	45%
Band Saws	50%
Butcher Saws	25@25.75%
Hand Saws	25@25.75%
Hand Saws, Bay State Brand	45%
Compass, Key Hole, &c.	25@25.75%
Wood Saws	40@75%
Wheeler, Madden & Clemson Mfg.	
Co.'s Cross Cut Saws	50%

**Hack Saw Blades and Frames—**

Atkins' Hack Saw Blades A A A	25%
Diston's:	
Concave Blades	25%
Chromol Blades	35%
Hack Saw Frames	30%
Simonds, 25%; The Best	35%
Culley	35%
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	40@75%
Hack Saws, Nos. 175, 180, complete	40@75%
Goodell's Hack Saw Blades	40@10%
Griffin's Hack Saw Blades	35@5.10
Star Hack Saws and Blades	15@10%
Sterling Hack Saw Blades	30@10.50
Sterling Power Hack Saw Machines	
each, No. 1, \$25.00; No. 2, \$30.00	10%
Victor Hack Saw Blades	20%
Victor Hack Saw Frames	40%
Whitaker Mfg. Co.'s:	
National Hand Blades, Hand	
Frames, Power Blades	40%

**Scroll—**

Barnes, No. 1	15%
Barnes Scroll Saw	15%
Barnes' Velocipede Power Scroll Saw	
without boring attachment	\$18
with boring attachment	\$20
Later, complete	\$10.00
Rogers, complete	\$3.00 and \$4.00

**Scales—**

Union Platform, Plain	\$2.10 @ 2.20
Union Platform, Stpd.	\$2.20 @ 2.30
Chattillon's:	
Eureka	25%
Favorite	40%
Grocers' Trip Scales	50%
The Standard Portables	40%
The Standard R. R. and Wag-	

**Sorapers—**

Chapin-Stephens Co., Box	30@30.10
Richards Mfg. Co., Foot	60%

**Screws—Bench and Hand**

Bench, Iron, doz., 1 in.	\$2.50 @ 2.75
1 1/2	\$3.00 @ 3.25
Bench, Wood	\$3.50 @ 3.75
Hand, Wood	70@10 @ 70.10 @ 10
Chapin-Stephens Co., Hand	70@70.10 @ 24%

**Coach, Lag and Hand Rail—**

Lag, Cone Point	80@80%
Coach, Gimlet Point	80@85%
Hand Rail	70@10 @ 75%

**Jack Screws—**

Standard List	70@10 @ 75%
Millers Falls	50@10 @ 10
Brett Iron Works	70@75%

**Machine—**  
Cut Tread, Iron, Brass or Bronze:  
Flat Head or Round Head,  
50@50.10  
Fillister Head.....40@40.10  
Rolled Thread, F. H. or R. H.,  
Iron.....75@10  
F. H. or R. H., Brass, Nos.  
8 to 14.....65@10

**Set and Cap—**  
Set (Iron).....75@10.75  
Set (Steel), net advance over  
Iron.....25%  
Sq. Hd. Cap.....55@50  
Hex. Hd. Cap.....70@10.75  
Rd. Hd. Cap.....50@75  
Fillister Hd. Cap.....60@75

**Wood—**  
List July 23, 1903.  
Flat Head, Iron.....87 1/2@50  
Round Head, Iron.....85@50  
Flat Head, Brass.....80@50  
Round Head, Brass.....77 1/2@50  
Flat Head, Bronze.....75@50  
Round Head, Bronze.....72 1/2@50  
Drive Screws.....87 1/2@50

**Scroll Saws—**  
See Saws, Scroll.

**Scythes—** Per doz.  
Plain Grass, Cutting Edge Pol-  
ished.....\$6.25 @ \$6.50  
Clipper, Bronzed Web.....\$6.50 @ \$6.75  
Solid Steel, Web and Backs Pol-  
ished.....\$7.00 @ \$7.25  
Bush, Weed and Bramble  
Painted.....\$6.50 @ \$6.75  
Grain, Painted, Cutting Edge  
Polished.....\$8.25 @ \$8.50  
Clipper Grain, Bronze Web  
.....\$8.50 @ \$8.75

**Seeders, Raisin—**

Enterprise	25@30%
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**Sets—Awl and Tool—**  
Fray's Tool Handles, Nos. 1, \$12;  
2, \$18; 3, \$12.....50%  
Millers Falls Adj. Tool Handles, No.  
1, \$12; No. 4, \$12; No. 5, \$18.....20@10%

**Garden Tool Sets**

American Fork & Hoe Co.:	
Rake, Shovel and Hoe, 1/2 doz. sets,	
No. 3 P. F.	75%

**Sets, Nail—**

Octagon	gro. 100 @ 3.75
Buck Bros.	21 1/2%
Elmore Tool Mfg. Co.	30%
Mayhew's	gro. 100 @ 3.00
Snell's Cup Pt.	40@10%
Snell's Knurled, Cup Pt.	gro. 100 @ 3.50

**Rivet—**

Regular List	75@75.10%
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**Saw—**

Atkins':	
Criterion	40%
Adjustable	40%
Diston's Star, Monarch and Tri-	
umph	30%
Giant Royal Cross Cut	doz. \$7.50
Morrill's No. 1	\$15.00
Nos. 3 and 4, Cross Cut	\$20.00
No. 5, Mill	\$30.00
Nos. 10, 11, 95	\$15.00
No. 1 Old Style	\$10.00
Special	\$16.25
Royal, Hand	doz. \$4.50
Seymour Smith & Son's	65%
Taintor Positive	doz. \$6.75

**Shaving—**

Fox Shaving Sets, No. 30	
Mounted Kitchen Sand Stone	doz., net, \$24.00
Smith & Hemenway Co.	75%

**Sharpeners, Knife—**

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	
doz.	\$1.50
Mounted Kitchen Sand Stone	doz.
Natural Grit Carving Knife	
Hones, doz.	\$3.00
Quick Cut Emery Carving	
Knife Hones, doz.	\$1.50
Quick Edge Pocket Knife	
Hones, doz.	\$2.50

**Skate—**

Smith & Hemenway Co., Eureka	50%
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**Shaves, Spoke—**

Iron	doz. \$1.25
Wood	doz. \$2.00
Chapin-Stephens Co.	30@30.10%
Goodell's	doz. \$9.00
Seymour Smith & Son's	30%

**Shears—**

Cast Iron	7 8 9 in.
Best	\$16.00 18.00 20.00 gro.
Good	\$13.00 15.00 17.00 gro.
Cheap	\$5.00 6.00 7.00 gro.
Straight Trimmers, &c.	
Best quality Jap.	70@10.50
Best quality Nickel	80@10.50
Tailors' Shears	40@10.10
A one Cast Shears	10@10.50
Columbian Cutlery Co.:	
Sheep, 1900 list	30@10.50
Grass	50@10%
Horse or Mule	50@10%
W. H. Compton Shear Co.:	
Japan Handles, Nickel Blades	60@10.50
Full Nickel	50@10.50
Heinrich's Tailors' Shears	10%
National Cutlery Co.'s Nickel Plated	60@10%
60@10%; Japan Handles	70@10%
J. Wiss & Sons Co.:	
Best Quality Jap'd	60@10%
Best Quality Nickel	50@10%
Tailors'	25%

**Tinners' Snips—**

Steel Blades	20@5 @ 20.10%
Steel Laid Blades	30@10%
Acme Cast Snips	40@10.50
W. H. Compton Shear Co., Forged	
Steel Handles	35%

**Forged Handles, Steel Blades, Sam-**

son	40@40.50
Heinrich's Snips	40%
Jennings & Griffin Mfg. Co.'s 6 1/2 to	
10 in.	35@47 1/2
National Cutlery Co.'s Forged Steel	
Niagara Snips	40%
P. S. & W. Forged Handles	25%
J. Wiss & Sons Co.:	
Wiss Forged Steel	25%

**Pruning Shears—**

Columbian Cutlery Co.:	
Hedge, Wilcut Brand	60@10%
Lawn and Border	60@10%
W. H. Compton Shear Co., Dropped	
Forged Steel	35%
Cronk's Hand Snips	35%
Cronk's Wood Handle Shears	35%
Diston's Combined Pruning Hook	
and Saw, doz. \$18.00	25%
Diston's Pruning Hook only	25%
doz., \$12.00	25%
J. T. Henry Mfg. Co.:	
Pruning Shears, all grades	40%
P. S. & W. Co.	40%
Seymour Smith & Son's:	
Hand Shears	70%
Standard Tree Pruners	75@10
Wood Handle Pruning Shears	40%

**Sheaves—Sliding Door—**

Reading	40%
R. & E. list	15%

**Sliding Shutter—**

Reading list	40%
R. & E. list	15%

**Shells—Shells, Empty—**

Brass Shells, Empty:	
Climax, 10 and 12 gauge	60@5%
Club, Rival, 65@5%; First Quality	60@5%

**Paper Shells, Empty:**

New Rapid, 10, 12, 16 and 20 gauge	
Climax, 10 and 12 gauge; Acme and	
Magic, 10, 12, 16 and 20 gauge;	
Ideal, 10, 12, 16 and 20 gauge;	
Leader grade	25@5%
Union, League, 10 and 12 gauge;	
Rival Grade	25%
New Climax, Defiance, 10, 12, 14,	
16 and 20 gauge; Climax, 14,	
16 and 20 gauge	20%
Challenge, Monarch, 10, 12, 16 and	
20 gauge; League, Union, 14, 16	
and 20 gauge; Repeater Grade	20%

**Shells, Loaded—**

Loaded with Black Powder	40%
Loaded with Smokeless Powder,	
medium grade	40@5%
Loaded with Smokeless Powder,	
high grade	40@10.10%
Union Metallic Cartridge Co.:	
New Club, Black Powders	40%
Nitro Club, Smokeless Powders	40@5%
Arrow, Smokeless Powders	40@10.10%
Winchester:	
Smokeless Repeater Grade	40@5%
Smokeless Leader Grade	40@10.10%
Black Powder	40%

**Shingles, Metal—Per Sq.**

Edwards Mfg. Co.:	
Painted	
11 x 20	\$4.25 Galv.
10 x 14	4.50
7 x 10	4.75
Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	\$4.05
Dixie, 10 x 14 in.	5.45
Dixie, 7 x 10 in.	5.25

**Shoes, Horse, Mule, &c.—**

F.o.b. Pittsburgh:	
Iron	per keg \$4.10
Steel	per keg \$3.85
Burden's, all sizes	per keg \$3.90

**Shot—**

Drop, up to B	25-lb. bag.
Drop, B and larger	1.85
Buck	1.85
Chilled	1.85
Dust	2.30

**Shovels and Spades—**

Association List	40@7 1/2 @ 40.10%
Avery Stamping Co.	40%

**Snow Shovels—**

Long Handle	\$2.50 @ \$2.75
Wood and Mail, D Handle	\$2.65 @ \$2.90

**Sieves and Sifters—**

Hunter's Imitation, gro.	\$9.50
Hunter's Genuine, per gro.	\$12.00

**Sifters, Ash—**

Acme Ball Bearing Sales Co., Acme	
Automatic Ash Sifter, each	\$3.25
doz.	\$39.00

**Sieves, Seamless Metallic**

Per dozen.	
Mesh	1 1/2 1 1/4 1 1/2 1 3/4 2 1/2
Iron Wire	\$1.05 1.05 1.10 1.10
Tinned Wire	\$1.15 1.15 1.20 1.30

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 Inch	
Mesh 18, Nested	doz. \$0.90 @ 0.95
Mesh 20, Nested	doz. \$1.00 @ 1.05
Mesh 24, Nested	doz. \$1.30 @ 1.40

**Sinks, Cast Iron—**

Pointed, Standard list:	
12 x 12 to 22 x 30 in.	60%
20 x 24 to 24 x 50 in.	50%
24 x 60 to 24 x 120 in.	30%
Barnes' low list	60%

**NOTE—There is not entire uniformity**

in lists used by jobbers.	
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**Skains, Wagon—**

Cast Iron	70 @ 70.10%
Steel	35 @ 40%

**Slates, School—**

Factory Shipments.	
"D" Slates	50 @ 50.10%
Eureka, Unexcelled Noiseless	
doz.	40 @ 7 tens.
Victor A., Noiseless	60 @ 65

**Slaw Cutters—See Cutters.**

**Snaps, Harness—**

German	40 @ 40.10%
Conert Mfg. Co.:	
Derby, 25%; Yankee, 30@2%; Yankee	
Roller, 30@2%	
High Grade, 40%; Trojan	40%
Jockey	25%

**Snaths—**

Grass Scythe	50 @ 50.45%
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**Snips, Tinners—See Shears.**

**Spoons and Forks—**

**Silver Plated—**

Good Quality	50@10 @ 60.45%
Cheap	60 @ 60.10%
International Silver Co.:	
1817 Rogers Bros.	40@10%
Rogers & Bro., William Rogers	
Eagle Brand	50@10%
Anchor, Rogers Brand	60%
Wm. Rogers & Son	60@10%

**Miscellaneous**

German Silver	6
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## Scythe Stones—

Pike Mfg. Co., 1907 list:	
Black Diamond S. S. 3/4 gro.	\$12.00
White Mountain S. S. 3/4 gro.	\$11.00
Green Mountain S. S. 3/4 gro.	\$7.00
Extra Indian Pond S. S. 3/4 gro.	\$8.00
No. 1 Indian Pond S. S. 3/4 gro.	\$5.00
No. 2 Indian Pond S. S. 3/4 gro.	\$5.00
Leader Red End S. S. 3/4 gro.	\$5.00
Quick Cut Emery..... 3/4 gro.	\$10.00
Pure Corundum..... 3/4 gro.	\$18.00
Crescent..... 3/4 gro.	\$7.00
Emery Scythe Rifles 2 Coat.	\$8.50
Emery Scythe Rifles 3 Coat.	\$11.00
Emery Scythe Rifles 4 Coat.	\$13.20
Balance of 1907 list 33 1/2%	
Electro (Artificial), 3/4 gro.	\$12.00 33 1/2%
Lighting (Artificial), 3/4 gro.	\$12.00 33 1/2%
Lighting (Artificial), 3/4 gro.	\$18.00 33 1/2%

## Stoppers, Bottle—

Victor Bottle Stoppers..... 3/4 gro.	\$9.00
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## Stops—Bench—

Millers Falls..... 15&10%	
Morrill's, 3/4 doz., No. 1.	\$10.00.....50%
Morrill's, No. 2, 3/2 doz.	\$12.50.....50%
Seymour Smith & Son's.....	60%

## Door—

Chapin-Stevens Co.....	50&50&10%
Chapin-Stevens Co.....	20%

## Straps—Box—

Acme Embossed, case lots.	20&10&10%
Cary's Universal, case lots.	20&10&10%

## Stretchers, Carpet—

Excelsior Stretcher and Tack Hammer Combined, 3/4 doz.	\$6.00.....20%
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## Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and	
Lard Presses.....	25&25&7 1/2%
National Specialty Co., list Jan. 1,	
1902.....	30&5%
P., S. & W. Co.....	40&10&5%

## Sweepers, Carpet—

Goshen Sweeper Co.: Per doz.	
Gilt Edge.....	\$27.00
Superline.....	23.00
Majestic.....	24.00
Select, Nickel.....	22.00
National Sweeper Co.: Per doz.	
National Queen, Nickel.....	\$27.00
Martha Washington, Nickel.....	25.00
Monarch, Japanned.....	20.00
Perpetual, Japanned.....	18.00
Streator Metal Stamping Co.: Per doz.	
Model E, Sanitaire.....	\$25.00
Eureka.....	15.00
Streator Majestic, Nickel.....	21.00
Streator Conqueror, Japanned.....	22.00

NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots.

## Tacks, Finishing Nails, &amp;c.

American Carpet Tacks.....	90&25@—%
American Cut Tacks.....	90&25@—%
Swedes' Cut Tacks.....	90&30@—%
Swedes' Upholsterers'.....	90&35@—%
Gimp Tacks.....	90&45@—%
Lace Tacks.....	90&45@—%
Trimmers' Tacks.....	90&30@—%
Looking Glass Tacks.....	65@—%
Bill Posters' and Railroad Tacks.....	90&40@—%
Hungarian Nails.....	80@—%
Finishing Nails.....	70@—%
Trunk and Clout Nails.....	75&50@—%

NOTE.—The above prices are for straight weights.

## Miscellaneous—

Double Pointed Tacks.....	90&6 tens@—%
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## See Also Nails, Wire.

## Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gasoline	
Gal.....	\$2.75
60.....	\$3.50
110.....	\$5.00

## Tapes, Measuring—

American Asses' Skin.....	50@—%
Patent Leather.....	35&30&5%
Steel.....	35 1/2 45 1/2
Chesterman's.....	35&25&5%
Keuffel & Esser Co.: Favorite, Ass Skin.....	40&10&50%
Favorite, Duck and Leather.....	25&30&25&10%
Metallic and Steel, lower list.....	35@ 35&5%; Pocket, 35&35&5%

Lufkins: Asses' Skin.....	40&10&50%
Metallic.....	30&30&5%
Patent Band, Leather.....	25&30&25&10%
Pocket.....	40&40&5%
Steel.....	35 1/2 45 1/2

Wichsch & Hilger: Chesterman's Metallic, No. 34L.....	25%
Chesterman's Steel, No. 1038L.....	35%

## Teeth, Harrow—

Steel Harrow Teeth, plain or	
headed, 3/4-inch and larger	
per 100 lb.....	\$2.55 @ \$2.80

## Thermometers—

Tin Case, Cabinet, Plange,	
Dairy, &c.....	30@35%

## Ties, Bale—Steel Wire—

Single Loop.....	82 1/2 10%
Monitor, Cross Head, &c.....	70&2 1/2%

## Tinner's Shears, &amp;c.—

See Shears, Tinner's, &c.	
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## Tinware—

Stamped, Japanned and Placed, sold	
very generally at net prices.	

## Tire Benders, Upsetters, &amp;c.

See Benders and Upsetters, Tire.

## Tools—Coopers—

L. & I. J. White.....	20@20&5%
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## Haying—

Myers' Hay Tools.....	50%
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## Ice Tools—

Gifford-Wood Co.....	15%
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## Miniature—

Smith & Hemenway Co.'s David-	
son, 3/4 doz., Nickel Plated, \$1.30;	
Gold Plated.....	\$2.00

## Saw—

Atkins' Cross Cut Saw Tools.....	35&5%
Simond's Improved.....	33 1/2%
Simond's Crescent.....	30%

## Ship—

L. & I. J. White.....	25%
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## Torches—

Hammers, Engine, 3/4 doz.....	\$1.50
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## Transom Lifters—

See Lifters, Transom.	
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## Traps—Fly—

Balloon, Globe or Acme, doz.,	
\$1.15 @ \$1.25; gro.....	\$11.50 @ \$12.00
Harper, Champion or Paragon,	
doz., \$1.25 @ \$1.40; gro.....	\$13.00 @ \$13.50

## Game—

Imitation Onocida.....	75@10%
Newhouse.....	50&5%
Hawley & Norton.....	65&10%
Victor.....	75@75&10%
Onocida Community Jump.....	70&5%
Stop Thief.....	60%
Tree Trap.....	60%
Hector.....	75@75&5%

## Mouse and Rat—

Mouse, Wood, Choker, doz. holes,	
12¢.....	
Mouse, Round or Square Wire,	
doz. 85 @ 90¢.....	

Marty French Rat and Mouse Traps	
(Genuine), 3/4 doz.: Crate lots. Small lots.	
No. 1, Rat.....	\$11.50 \$11.50
No. 3, Rat.....	\$5.75 \$5.75
No. 3 1/2, Rat.....	\$4.70 \$4.70
No. 5, Mouse.....	\$2.25 \$2.25

Animal Trap Co.: Out o' Sight, Mouse, 3/4 doz.....	\$0.60
Out o' Sight, Rat, 3/4 doz.....	1.20
Easy Set, Mouse, 3/4 doz.....	.85
Easy Set, Rat, 3/4 doz.....	.85
Out o' Sight Chockers, 3/4 doz.	
holes.....	12
Out o' Sight, Tin 3-hole, 3/4 doz.	
traps.....	.75

## Trowels—

Disston Brick and Pointing.....	25%
Disston Plastering.....	20%
Disston "Standard Brand" and Gar-	
den Trowels.....	30%
Kohler's Steel Garden Trowels, 3/4 gro,	
5 in., \$1.80; 6 in., \$6.00.	

Never-Break Forged Steel Garden	
Trowels, in bulk, net 3/4 doz.....	\$5.50
In 1 doz. boxes.....	\$6.00
Woodrough & McFarlin, Plastering.....	25%

## Trucks, Warehouse, &amp;c.—

B. & L. Block Co.: New York Pattern.....	50&10%
Western Pattern.....	60&10%
Handy Trucks.....	3/4 doz. \$16.00
Grocery.....	3/4 doz. \$15.00
McKinney Trucks.....	each, net \$10.00
Model Store Trucks.....	3/4 doz. \$18.50

## Tubs, Wash—

No. 0 1 2 3	
Mfr's list, price per gross, sub-	
ject to discount of 10¢ 7 1/2¢ 4¢ 5¢	
& 10¢ 5%.	
Galvanized.....	\$67 \$79 \$91 \$103

## Twine, Miscellaneous—

Flax Twine:	
No. 9, 1/4 and 1/2-lb. Balls.....	21 @ 25¢
No. 12, 1/4 and 1/2-lb. Balls.....	19 @ 21¢
No. 18, 1/4 and 1/2-lb. Balls.....	16 @ 18¢
No. 24, 1/4 and 1/2-lb. Balls.....	13 1/2 @ 17 1/2¢
No. 36, 1/4 and 1/2-lb. Balls.....	15 @ 17¢
Chalk Line, Cotton.....	21 @ 29¢

Cotton Mops, 6, 9, 12 and 15 lb.	
to doz.....	8 1/2 @ 21¢
Cotton Wrapping, 5 Balls to lb.,	
according to quality.....	13 1/2 @ 21¢
American 2-Ply Hemp, 1/2 and 1-lb.	
Balls.....	18 1/2 @ 11¢
American 3-Ply Hemp, 1-lb.	
Balls.....	18 1/2 @ 16¢
India 2-Ply Hemp, 1/2-lb. Balls,	
Balls (Spring Twine).....	7 1/2 @ 9¢
India 3-Ply Hemp, 1-lb. Balls.....	7 1/2 @ 9¢
2, 3, 4 and 5-Ply Jute, 1-lb.	
Balls.....	9 @ 11¢
Mason Line, Linen, 1/2-lb. Balls.....	17¢
No. 26 1/2 Mattress, 1/4 and 1/2 lb.	
Balls, according to quality.....	30 @ 60¢

Wool, 3 to 6 ply.....	B 6¢; A 7 1/2¢
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## Vises—

Solid Box.....	60 @ 60&10%
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## Parallel—

Athol Machine Co.: Simpson's Adjustable.....	40%
Standard.....	40%
Amateur.....	25%
Columbian Row, Co., Slide.....	65%

Fisher & Norris Double Screw, each.	
No. 2, \$10.50; 3, \$16.00; 4, \$20.50;	
5, \$27.00; 6, \$32.00.....	15&10%
Fisher-Brooks Bench Vises, No. 0,	
\$3.00; No. 1, \$5.90; No. 2, \$8.25;	
No. 3, \$10.50; No. 4, \$13.50.....	15&10%

## Fulton Mach. &amp; Vise Co.

P. & R. Double Swivel Ma-	
chinalists'.....	40%
Star, Solid Jaw, Machinists'.....	40%
Holland's.....	40&40&5%
Machinists'.....	40&40&5%
Keystone.....	65&50&10%

Lewis Tool Co.: Adjustable Jaw.....	30%
Monarch, 50%; Solid Jaw.....	50%
Massey Vise Co.: Clincher.....	40%
Parallel Bar.....	15%
Perfect, 15%; Lightning Grip.....	15%
Merrill's.....	25%
Millers Falls Oval Slide Pattern.....	60&10%

Parker's: Victor, 20@25%; Regulars.....	20@25%
Vulcan.....	40&45%
Combination Pipe.....	55&60%
Prentiss.....	20@25%
Rock Island.....	25%
Snediker, X. L.....	33 1/2%
Stephens'.....	33 1/2%

Saw Filers: Diston's D. 3 Clamp and Guide, 3/4	
doz., \$24.00, 30%; Clamps.....	30%
Perfection Saw Clamps, 3/4 doz.....	\$4.50
Reading.....	60%

Wood Workers: Fulton Mach. & Vise Co.: P. & R. Double Swivel Coach-	
man's.....	40%
Star Solid Jaw Woodworkers'.....	60%
Massey Vise Co.: Lightning Grip, 15%; Perfect.....	15%
Wyman & Gordon's Quick Action, 6	
in., \$6.00; 9 in., \$7.00; 11 in., \$8.00.	

Miscellaneous: Fulton Machine & Vise Co., Com-	
bination Pipe.....	70%
Holland's Combination Pipe.....	60&60&5%
Massey's Quick Action Pipe.....	40%
Parker's Combination Pipe.....	40%
87 Series, 60%; 127 Series, 60&5%; No.	
870, 40%.	
Rock Island Pipe.....	25%

Wads—Price per M. B. E., 11 up.....	60¢
B. E., 9 and 10.....	70¢
B. E., 8.....	60¢
B. E., 7.....	60¢
B. E., 11 up.....	\$1.00
P. E., 9 and 10.....	1.25
P. E., 8.....	1.50
P. E., 7.....	1.50
Ely's B. E., 11 and larger.....	\$1.70 @ 1.75
Ely's P. E., 12 to 20.....	\$2.00 @ 3.25

Ware, Hollow—Cast Iron, Hollow—Store Hollow Ware:	
Enameled.....	45&10%
Ground.....	50&5%
Plain or Unground.....	60%
Country Hollow Ware, per 100	
lbs.....	\$2.75 @ \$3.00

White Enameled Ware: Maslin Kettles.....	65&10%
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Covered Ware: Tinned and Turned.....	35&10%
Enameled.....	45&10%

See also Pots, Glue. Enameled—	
Agate Nickel Steel Ware.....	33 1/2%
El-an-ge.....	60&10%
Iron Clad Ware.....	70&10%
Lava and Volcanic, Enameled.....	40&10%

Tea Kettles: Galvanized Tea Kettles:	
1/2 inch.....	4 7 8 9
Each.....	45¢ 50¢ 55¢ 65¢

Steel Hollow Ware—Avery Stamping Co.: Never-Break Spiders and Grid-	
dles.....	65&10%
Steel Kettles, Maslin Scotch	
Bowls, Tin'd.....	60%
Steel Stew Pans, Stew Pots, etc.	
Porcelain.....	50%
Cleveland Stamping & Tool Co.: Solid Steel Spiders and Grid-	
dles.....	65&5%
Solid Steel Kettles.....	60&5%

Warrners, Foot—Pike Mfg. Co., Soapstone.....	40&40&10%
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Washboards—No. 800, Brass King, Single Surface,	
Open Back.....	\$2.00
862—White Hen, Spiral Grimp	
Glass.....	\$3.35
964—Royal Blue Enamel, Single Sur-	
face, Ventilated Back.....	\$3.35
1172—Our Best, Single Zinc, Soap	
Draher.....	\$3.35
122—Soap Saver, Single Zinc, Iron	
Top.....	\$3.35
100—Northern Queen, Single Zinc,	
Perforated, Open Back.....	\$3.00
134—Universal, Single Zinc, Extra	
Family Size Ventilated Back.....	\$2.80
760—Banner Globe, Single Zinc, Ven-	
tilated Back.....	\$2.25
57—Peelless, Double Zinc, Spiral	
Protector.....	\$3.70
56—Red Cross, Double Zinc, Swing	
Protector.....	\$3.60
17—North Star, Solid Zinc, Swing	
Protector.....	\$3.60
197—Jewel, Single Zinc, Pall Size.....	\$1.25
81—Louis Washboard Co., Ben Hur, Brass, Open Back.....	\$2.50
Brass Key, Open Back.....	\$2.75

Washers—Leather, Axle—Solid.....	30@30&10%
Patent.....	30@30&10%
Coll: 3/4 1 1 1/2 1 3/4 1 1/2	
Coll: 3/4 1 1 1/2 1 3/4 1 1/2	

Iron or Steel: Size bolt.....	5-16 3/8 1/2 5/8 3/4
Washers.....	\$1.90 \$1.00 \$2.70 \$2.50 \$2.30

The above prices are based on	
\$6.50 off list.	

In lots less than one keg add 1/2¢ per lb.; 5-lb. boxes add 1/4¢ to list.

Avery Stamping Co.:	
Standard, in 200 lb kegs, \$6.00	3/4
100 lb. disc.: in 100 lb kegs, add	
10¢ net	3/4 100 lb; in 5 or 10 lb
boxes, add 50¢ net	3/4 100 lb;
in 1 lb boxes, add \$1.00 net	3/4
100 lb.	



